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ARTMENT OF TRANSPORTATION

12th Annual Report
Fiscal Year 1978

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U.S.
DEPARTMENT
OF
TRANSPORTATION

12th Annual Report
Fiscal Year 1978

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Summary

Summary

The primary responsibilities of the U.S. Department of Transportation are to assure the coordination and effective administration of federal transportation policies and to develop policies and programs which will result in the provision of fast, safe, and convenient transportation at the lowest possible cost.

The following paragraphs summarize a few of the Department's fiscal year 1978 activities in carrying out those responsibilities. More detailed accounts of these and other Departmental activities are given in the progress reports which follow this summary.

Transportation Policy

A statement of transportation policy was issued by the Secretary on February 6, 1978. In addition to reaffirming the Department's commitment to several long-standing development goals, the statement emphasized a need for prudent management and use of existing transportation facilities.

Reorganization

A major Departmental reorganization was carried out early in fiscal year 1978. The reorganization substantially reduced the size of the Office of the Secretary, consolidated the Secretary's staff support, and consolidated most of the Department's intermodal activities.

Energy Programs

A number of studies relating to future requirements for coal transportation were completed, and basic concepts for a coal transportation assistance program were developed. A study of all energy transportation needs was also begun.

Major efforts to promote energy conservation were developed, with primary emphasis given to ridesharing programs and to enforcement of the 55 mph speed limit.

Regulatory Reform

The Department continued its broad efforts to reduce the economic regulation of the transportation industry. In addition to supporting the legislation which resulted in the Airline Deregulation Act of 1978, the Department participated in efforts to reduce and liberalize the regulations of the Civil Aeronautics Board, the Interstate Commerce Commission, and the Federal Maritime Commission. The Department also helped to draft an Administration policy which was expected to increase competition in international air services.

Marine Transportation

An office of marine transportation was created within the Office of the Secretary. The new office was to provide a Departmental focal point for marine transportation policy.

Expansion of the Loran-C radionavigation system continued, and the Coast Guard began phasing out the less accurate Loran-A system. The Coast Guard also began operating the longer-range OMEGA system.

Coast Guard responsibilities in law and treaty enforcement continued to grow, and drug interdiction activities were significantly increased. Seven vessels were seized for fisheries law violations and 130 for transporting illegal aliens or illegal substances.

Two international conferences on tanker safety were held during the year. Measures adopted at the conferences were expected to reduce oil pollution problems by improving tanker safety and the training of tanker crews. The Coast Guard was also successful in gaining international acceptance of improved methods of cleaning cargo oil tanks.

Coast Guard boating safety activities included monitoring 169 recall campaigns and testing 45 boats for compliance with boating safety standards. Twenty-one of the boats failed to meet the standards.

The Coast Guard Auxiliary, which plays a major role in the Coast Guard's boating safety program, inspected about 300,000 boats. During the year, the Auxiliary assisted more than 61,000 people and was credited with saving 1,083 lives.

A Coast Guard vessel traffic service began operating in Prince William Sound and the Port of Valdez. By the end of the year, more than 400 tank vessels had visited Valdez without an accident.

In addition to its efforts to reduce maritime accidents, the Coast Guard continued to improve its ability to respond effectively to spills of oil and hazardous substances. During the year, it responded to two major oil spills off the coast of South America.

Construction began on a deepwater tanker port off the coast of Louisiana. Meanwhile, the Department continued its review of an application from the state of Texas to construct a deepwater port off the Texas coast.

Tonnage through the Montreal-Lake Ontario section of the Saint Lawrence Seaway declined to 62.8 million tons, only slightly less than the record levels reached the year before. Meanwhile, Seaway Corporation revenues increased, by 15 percent, to a record $9.9 million.

Aviation

U.S. air travel reached record levels, and U.S. air safety also continued to improve. The scheduled air carrier passenger fatality rate was well below the average rate for the past 5 years; in fact, it was the third lowest in the past decade. General aviation fatality rates also continued their long-term decline, reaching the lowest levels in the past decade.

The Federal Aviation Administration completed the revision and updating of the regulations for the commuter airline and air taxi industry. This is the fastest growing segment of the aviation industry, and the revised rules were expected to upgrade its operating and maintenance standards.

A study of health problems of air traffic controllers, begun in 1973, was completed. The study found the controllers to be as healthy as the general population, except for a higher than normal rate of hypertension. Studies of the effects of atmospheric ozone on passengers and crew members during long-distance high-altitude flights were continuing. Meanwhile, the Federal Aviation Administration was preparing regulations which would limit ozone exposure.

There were 31 aircraft hijacking attempts during the year, including 10 against U.S. aircraft. An international agreement on hijacking was reached in July 1978, and the U.S. was working closely with other countries to implement the agreement.

U.S. air traffic activity continued to increase. All aircraft activity categories recorded by the Federal Aviation Administration showed some increase, and the number of aircraft operating under instrument flight rules was up sharply.

Efforts to control or reduce the effects of aircraft noise continued. New rules adopted by the Federal Aviation Administration imposed noise limits on supersonic aircraft and provided added protection from sonic booms.

Highways

As of September 30, 1978, 92.1 percent of the 42,500 mile interstate system was open to traffic, and 3.4 percent was under construction.

About $7.5 billion in federal highway aid was provided during the fiscal year. Approximately 40 percent of the total ($3 billion) was obligated for interstate system construction. An additional $167 million was obligated for rehabilitation of existing highways.

A total of $171 million was obligated under the special bridge replacement program. This brought the total bridges which had been replaced under this program to 1,750, but left more than 36,000 bridges which were considered deficient.

More than $450 million was obligated for projects to improve highway operations. Included were 58 projects to smooth traffic flow through traffic signals. The Department continued its efforts to promote ridesharing; and, for the first time, federal funds were made available for leasing fringe parking facilities from private businesses.

Approximately 20 percent of the total federal highway aid was obligated for projects to improve highway safety. The Federal Highway Administration also increased its motor carrier safety activities. This was reflected in a 37.2 percent increase in the number of commercial motor vehicles inspected and a 42.8 percent increase in the number of vehicles taken out of service.

There were about 50,226 deaths from motor vehicle accidents in calendar year 1978, compared to 47,868 in 1977 and 45,523 in 1976. The fatality rate (fatalities per 100 million vehicle miles) also increased slightly, although it remained near the record low reached in 1976. Motorcycle deaths continued to increase sharply, as they had done since the widespread repeal of mandatory helmet laws.

Two major safety recall actions began in fiscal year 1978. One involved fuel tanks on about 1.5 million automobiles manufactured by Ford Motor Company. The other involved about 14 million radial tires manufactured by Firestone Tire and Rubber Company.

The fuel economy of the passenger car fleet continued to increase. Model year 1978 passenger cars were averaging more than 19 miles per gallon, compared to 14 miles per gallon in 1974.

Railroads

Train accidents continued to increase, and track defects continued to be the most frequent cause. Track defects accounted for 41.8 percent of all train accidents in calendar year 1977.

The Federal Railroad Administration continued to expand its track inspection program. Three track geometry vehicles were in use during fiscal year 1978 and 52,000 miles of track were inspected.

The Federal Railroad Administration's enforcement activities also continued to increase. The total penalties assessed for violations of safety regulations in fiscal year 1978 was more than double the amount assessed the year before.

Federal financial assistance to the railroads increased sharply. A total of $216.5 million in preference shares were purchased and $85 million in loans were guaranteed in fiscal year 1978. Only $61.9 million in preference shares were purchased and $12 million in loans guaranteed in fiscal year 1977. In addition, approximately $50 million was provided to the states for local rail service assistance projects.

The activities and revenues of the Alaska Railroad continued to decline, as they had done since completion of the oil pipeline. Total freight tonnage was down 5.5 percent and total revenues were down 16.9 percent. The total number of passengers carried increased, however, by 7 percent.

Urban Mass Transportation

Nearly $2 billion in Urban Mass Transportation capital grants was approved in fiscal year 1978, an increase of 18 percent from the year before. The funds went to 265 new projects and 127 continuing projects. A total of $556.4 million of the capital funds came from urban highway funds.

About $1.4 billion of the capital grant funds went to rail transit projects. Bus transit projects received about $580 million; and $4 million was approved for engineering and design work for 4 downtown people mover systems.

A total of $692.3 million in transit operating grants was approved during the year. This was an increase of 19.8 percent from the year before.

The Urban Mass Transit Administration also prepared specifications for high-capacity articulated buses for use in transit systems. At the end of the year, funds had been provided for more than 400 of the articulated buses.

The 5 cities which were selected for downtown people mover demonstration projects began preliminary planning. Based on studies of existing people mover systems, the downtown people movers were expected to have high reliability and low operating costs.

Materials Transportation

Problems related to the transportation of hazardous materials continued to increase. A total of 17,566 hazardous materials incidents were reported during fiscal year 1978, an 18.5 percent increase over fiscal year 1977. Fatalities resulting from hazardous materials incidents increased by 42.4 percent, to 47; and injuries increased by 79.2 percent, to 1,195.

Hazardous materials present especially severe problems for the railroads. As a result, the Research and Special Programs Administration and the Federal Railroad Administration continued their efforts to develop puncture proof end shields and anti-override couplers for tank cars.

A total of 1,400 tank cars were derailed in calendar year 1977, and about 150 of the cars released hazardous materials. The situation was even worse early in calendar year 1978, and one accident, at Waverly, Tennessee, resulted in 16 deaths.

Planning continued for the proposed Alaskan natural gas pipeline. Economic and technical reports were prepared dealing with various design alternatives for both the U.S. and Canadian segments of the pipeline.

During calendar year 1977, gas pipeline operators reported 1,996 failures. This was a 25 percent increase over calendar year 1976. Fatalities (36) declined by 42.9 percent, but injuries (450) increased by 23 percent. There were also 3 deaths and 19 injuries resulting from 238 reported liquid pipeline accidents.

Progress Reports

Office of the Secretary

The Office of the Secretary provides staff and advisory support for the Secretary and supports and coordinates the activities of the various administrations within the Department. In addition, the Office of the Secretary has primary or sole responsibility for carrying out certain programs. This progress report emphasizes those programs.

Transportation Policy

On February 6, 1978, the Secretary issued a statement of national transportation policy. The statement emphasized the point that the nation was going through a transition from a time of building, developing, and expanding transportation systems to a time of more prudent management and use of the existing transportation systems. In particular, the statement emphasized the need to get the most out of the existing physical plant, while paying closer attention to the effects of the transportation system on human needs, natural resources, and the quality of the environment.

The statement reaffirmed the nation's commitment to several long-standing objectives, including economic development, national security, efficient management of public transportation systems, and preserving the vitality and competitiveness of private transportation systems. In addition, the statement pointed out the need to give increased attention to other concerns, including energy conservation and production, environmental protection and enhancement, safety, the quality of life, and improved allocation of human and material resources.

Reorganization

On July 20, 1977, the Secretary announced plans for a reorganization of the Department. The primary objective of the reorganization was to reduce the size of the Office of the Secretary. The reorganization began on September 23, 1977, and was largely completed by the end of the first quarter of fiscal year 1978.

The reorganization eliminated the Deputy Under Secretary and one assistant secretary, transfered, consolidated, or eliminated 11 other offices, and reduced the overall size of the Office of the Secretary by approximately 970 people. (Specific details of the reorganization are given in the Appendix to this report.)

The new organization consolidated the staff support provided to the Secretary and improved the management of the Department by: (1) consolidating policy development activities; (2) reassigning responsibilities in a way that emphasized accountability; (3) clarifying the reporting relationships within the Department; and (4) consolidating most of the Department's intermodal activities into a new Research and Special Programs Administration.

During fiscal year 1978, work began on a second reorganization objective, consolidation of the Federal Highway Administration and the Urban Mass Transportation Administration. Consolidation of these two Administrations was expected to improve the service provided by the Department to the public, as well as improving the utilization of existing Departmental personnel. A formal proposal for the consolidation was to be submitted to Congress early in fiscal year 1979.

Marine Transportation Policy

An Office of Marine Transportation was established within the Office of the Secretary. The new office consolidated various domestic and international marine transportation policy functions which fell within the Department's area of responsibility. The Office also provided a focal point for increased emphasis on marine transportation policy within the Department.

Energy Transportation

During fiscal year 1978, the Department's coal transportation task force report was published; and studies of transportation requirements for coal movement in 1985 by rail and water and development of a method for evaluating coal slurry pipeline proposals were completed. A concept paper outlining the elements of a coal transportation assistance program was developed; and the paper was sent to other federal agencies for comment. A joint Department of Transportation and Department of Energy national energy transportation study was initiated. The purpose of the study was to examine the ability of the nation's transportation system to transport energy.

Energy Conservation

A major new ridesharing initiative was developed to promote, demonstrate, and evaluate various aspects of ridesharing. The Office of the Secretary, the Federal Highway Administration, and the Urban Mass Transportation Administration provided funds to support a three-year program to promote ridesharing as a major means of conserving energy, reducing congestion, and achieving clean air goals. In addition, task forces were established to evaluate conservation measures for highway vehicles, 55 mph compliance and enforcement, and the energy benefits of mass transit.

Airline Regulatory Reform

In addition to supporting the reform legislation which resulted in the Airline Deregulation Act of 1978, the Department participated in Civil Aeronautics Board proceedings in an effort to reduce and liberalize its regulations. The Midway and Oakland route proceedings and the transcontinental low-fare route proceeding were expected to result in a significant increase in the number of competitors on the routes involved. The Board's revision of its domestic passenger fare investigations and actions which it took pursuant to the Presidential review of transatlantic fare filings was expected to increase price competition. Similarly, charter rule simplification was expected to significantly expand low-cost travel opportunities.

Motor Carrier Regulation

The Department participated in Interstate Commerce Commission proceedings on owner-operator leasing regulations, minority participation in the trucking industry, consumer protection for household goods movement, industry entry restrictions, and price competition in licensing new carriers and services. The Department and the Interstate Commerce Commission also collaborated on an interagency research program on issues affecting owner-operator truckers. The Department provided technical assistance to the Senate Antitrust Subcommittee in rate bureau traffic data analysis; and a research project on options and problems associated with regulated motor carrier service to small communities was undertaken.

Railroad Regulation

Throughout the year, the Department worked with the Interstate Commerce Commission to implement the provisions of the Railroad Revitalization and Regulatory Reform Act of 1976. A new rail accounting system was implemented in January 1978; and many issues were addressed, including rate incentives for capital invesment, market dominance, and proposed policies on mergers and abandonments.

International Air Transportation

The Department helped draft a policy for conducting international air transportation negotiations. The policy identified national goals, priorities, and negotiating objectives and strategies. Major air markets were studied to identify those countries which might be amenable to low fares and to liberalized scheduled and charter air services. By the end of the fiscal year, agreements had been completed with Belgium, the United Kingdom, the Ivory Coast, Liberia, Mexico, the Netherlands, Nigeria, Paraguay, Romania, Senegal, Venezuela, and Yugoslavia. Allegations of discriminatory practices against U.S. air carriers in foreign operations were investigated in fourteen foreign countries and were being monitored in nine others. Such discriminatory practices contradict the national policy of promoting competitive operating conditions and eliminating restrictive practices, as stated in the Fair Competitive Practices Act. A comprehensive review of the Fair Competitive Practices Act and its effectiveness was completed, and recommendations for modifications were being considered.

Marine Initiatives

The Department participated in proceedings before the Federal Maritime Commission in an effort to ensure the continuation of joint through rates (ship-rail-ship rates) and the withdrawal of existing anti-competitive rate agreements which affected trans-Atlantic trade.

The Department also completed a study of ocean freight rates which showed U.S. freight rates (the cost of shipping from U.S. ports) to be higher than the cost to ship from other countries. An attempt to reconcile the differences by equalizing the inbound rates at U.S. ports was rejected because of fear that the consequence would be a significant reduction of U.S. imports and an adverse overall effect on international trade.

Urban Investment Policy

The Office of the Secretary coordinated the development of a joint Federal Highway Administration and Urban Mass Transportation Administration policy on major urban transportation investments. The policy included a requirement for a joint alternatives analysis in corridors where there were important differences between planned highway and mass transit investments.

Air Quality Planning

The Department of Transportation and the Environmental Protection Agency issued a memorandum of understanding on the integration of transportation and air quality planning. In addition to providing guidelines for metropolitan planning organizations, the memorandum provided for a single federal decision-making process for reviewing local proposals.

Environmental Impact Statements

The Department worked with the Council on Environmental Quality, the Corps of Engineers, and the Environmental Protection Agency to ensure that issues concerning more than one agency were resolved as part of environmental impact statement development, in order to avoid later confrontations. A notice requiring documentation of environmental design matters in environmental impact statements was issued, and research to promote improved design, art, and architecture in transportation projects was begun.

The Department also worked with the Department of Housing and Urban Development to ensure that issues relating to social and economic impacts are resolved during the environmental impact statement review process.

Rail Transit Safety

A review of Departmental activities relating to rail transit safety was conducted. The review resulted in the delegation of complete responsibility for rail transit safety to the Urban Mass Transportation Administration and the establishment of a task force to develop a rail transit safety plan.

Intercity Bus Activities

The Department began research on the effect of entry and exit restrictions on intercity bus service, industry subsidies, and traveler attitudes. An analysis of the financial condition of the industry was also started. In addition, the Department assisted the Interstate Commerce Commission, which was also conducting a study of the intercity bus industry.

Rural Public Transportation

The Department prepared a comprehensive report describing rural public transportation problems and possible responses to them, including program consolidation, technical assistance, and regulatory simplification. In conjunction with the report, a process for establishing procedures and regulations for rural public transportation programs was developed. The recommendations included establishing dialogues with state and local officials; creation of an interagency task force; and development of formal procedures for obtaining advice and comments from outside experts.

Handicapped and Elderly Transportation

A notice of proposed rulemaking was issued, covering proposed rules for implementing Section 504 of the Rehabilitation Act of 1973, which required accessibility for handicapped persons to all transport systems receiving financial assistance from the Department. The notice included proposed rules for the modification of existing facilities as well as accessibility to new facilities.

International Agreements

The Department participated in the completion of a number of international multi-modal agreements during the year. Included were an extension of the U.S. – U.S.S.R. transportation agreements and reimbursable technical assistance agreements with Iran and Saudi Arabia. An existing memorandum of understanding with Germany was extended and a new memorandum of understanding was signed with the Netherlands, reflecting the U.S. policy of promoting broader opportunities for innovative and competitive transport pricing.

International Assistance

The Department provided advice and technical assistance to the Agency for International Development on a number of diverse projects, including a transport investment strategy for several African countries, a Middle East transport survey, highway safety improvements for Jordan, and road construction projects in Latin America.

Deepwater Ports

On August 24, 1978, the Texas Deepwater Port Authority applied for a transfer of the deepwater port license which had been offered to and rejected by Seadock, Inc. to the State of Texas. At the end of the fiscal year, the Texas application had been distributed to those federal and state agencies which were required to advise the Department on deepwater port licensing. Although the Deepwater Port Act of 1974 contained no clear time frames for processing amended applications, the Department was following the guidelines for new applications, as much as possible. On that basis, the Department hoped to be able to make a decision by August 1979.

LOOP, Inc., which accepted its license in 1977, was beginning the construction phase of its port off the coast of Louisiana. The Department was continuing to monitor the LOOP project to ensure that all license conditions were met. LOOP expected to have its facility in operation by the end of 1980.

In August 1978, the Department published a report on its Atlantic Coast deepwater port study, which examined the feasibility of a deepwater port in the North Atlantic. States in this region had shown some interest in a deepwater port. The area accounted for a significant part of the consumption of oil in the United States and was almost totally dependent on imported crude oil.

National Urban Policy

In March 1978, the President announced the formation of an interagency coordinating council to implement his urban policy. The Department was actively involved in the work of the council. Issues in which both the council and the Department were involved included the development of a single population projection for all federal planning, coordination of multi-agency investment opportunities in urban areas, and identification of trade-offs between air quality goals and economic development goals.

Program Monitoring and Evaluation

The Office of the Secretary developed and was preparing to implement a program monitoring and evaluation system. The main objectives of the system were to improve Departmental program management by determining overall effectiveness, developing a basis for program trade-offs, and identifying potential problem areas for early attention. The results of the system were to be used in policy development as well as program planning and budget development.

Surface Transportation Legislation

The Office of the Secretary worked with the Federal Highway Administration, the Urban Mass Transportation Administration, and the National Highway Traffic Safety Administration to develop the combined surface transportation legislation which was passed by Congress in October 1978. The legislation provided substantial improvements in program flexibility and allowed greater shifts in program emphasis.

Management

In May 1978, a Departmental order was issued which increased the amount of Secretarial review and decision-making in major systems acquisition and approval. The Department's acquisition policy was also revised to increase the review and approval requirements for systems which did not meet the criteria for major systems.

Fiscal year 1978 was also a year of revitalization and redirection for the Department's minority business enterprise program. The Department implemented an innovative and aggressive program to increase the awarding of contracts to minority business, both in the direct procurement activities of the Department and the contracting which results from federal assistance programs. As a result, minority business participation in federal assistance programs increased from $114,091,000 in fiscal year 1977 to $198,211,000 in fiscal year 1978, a 74 percent increase.

Efforts to maximize minority business participation in Office of the Secretary procurements included the restructuring of the bidders list system, to assist in identifying minority business firms. As a result, contract awards to minority firms increased from 8 contracts totaling $642,312 in fiscal year 1977 to 31 contracts totaling $2,348,733 in fiscal year 1978.

A total of 211 audit reports were issued during fiscal year 1978. As the result of one audit, the Department and a Presidential task force on cash management developed a proposal for a government-wide change in the method of reimbursing state and local governments for amounts which were awarded to the states but withheld from contractors. The proposal, if adopted, was expected to save $12 million in interest for the highway trust fund. The Department of Transportation also worked with the Treasury Department on the development and approval of letter-of-credit procedures for the Urban Mass Transportation Administration. The new procedures would provide recipients with funds in a timely manner, while keeping the amount of idle federal funds held by grantees to a minimum.

Automated Data Processing

To improve management of the Department's automated data processing (ADP) activities, the Office of the Secretary established a task force to develop a Departmental ADP policy. The task force, representing all the Administrations, was to develop procedures for ADP planning, computer acquisition, resource management, program evaluation, and the auditing of ADP functions.

During the year, a computer replacement strategy was developed for the Transportation Computer Center. The strategy addressed both the operating problems and the unmet needs inherent in the center's present computer hardware and provided an analysis of various replacement alternatives. The Office of the Secretary also developed a proposal to consolidate the Department's payroll and personnel systems, in order to achieve economies of scale and consistency in the information provided.

One of the major activities begun during the year was a pilot project to demonstrate that office automation could significantly improve overall operating efficiency, productivity, and effectiveness. The studies to be carried out during this project were to include determining the best types of equipment and systems for use in Departmental offices.

Personnel Programs

Throughout the year, the Department emphasized the hiring of minorities and women. To facilitate this effort, the Department utilized the new Presidential Management Intern Program and other special entrance-level trainee programs. At the same time, existing Departmental employees were receiving improved training, including the executive seminar series, which provided key personnel with a better understanding of the Department's programs and policies. During fiscal year 1978, a number of state and foreign transportation executives participated in the executive seminar programs. Their participation brought a broader perspective to the seminars.

Civil Rights

During fiscal year 1978, civilian minority employment in the Department rose from 13.1 percent to 13.4 percent, and the employment of civilian women increased from 17.3 percent to 17.4 percent despite an overall civilian workforce reduction of 1.1 percent. The movement of minorities and women into the higher grades was reflected in a rise in the average grade of both groups: The minority average grade climbed from GS-8.9 to GS-9.2, and the women's average grade rose from GS-6.5 to GS-6.9. Minority supergrade employment remained constant, with 19 minority employees in grades GS-16 through GS-18 out of a total of 383, while the number of women supergrades increased from 4 to 9.

Minority and female employment in professional and para-professional jobs also increased. Minority employment increased from 9.7 percent to 10 percent; and the employment of women increased from 8.2 percent to 8.7 percent. These increases were the result of Departmental programs designed to bring minorities and women into the Department's principal technical and professional occupations — air traffic control, electronics, and engineering.

During fiscal year 1978, the Coast Guard ended all restrictions based on sex in the training, assignment, and career opportunities of its military personnel. This followed an earlier decision to allow women to serve aboard Coast Guard vessels.

During the year, the Department completed final revision and full implementation of its civil rights information system. The system was designed to provide racial and ethnic information to be used in checking grantee compliance with civil rights programs. Two major airports, two highway projects, and a transit commission were found to be not in compliance with civil rights requirements. Four major airlines were found to be not in compliance with the Department's contract compliance program. These four cases were referred to the Department of Labor. The Department also submitted an enforcement plan to the Department of Justice, which oversees the Department's enforcement activities.

A Departmental order was issued which required grantees and contractors to utilize minority contractors to a substantial degree, through development of minority business enterprise affirmative action plans and the establishment of minority business enterprise percentage goals. Affirmative action and minority business enterprise requirements were developed for a new Departmental licensee, the Louisiana offshore oil port. Goals were also established in connection with the northeast corridor improvement project, which is administered by the Federal Railroad Administration. The goals were expected to provide increased minority and female employment and business opportunities. By the end of the fiscal year, $47.3 million in contracts had been awarded to minority businesses, out of a total of $261.1 million. This represented 18.1 percent of the contract funds awarded, or 3.1 percent above the project's goal of 15 percent. Nearly 31 percent of all contracts on the architecture and engineering phase of the project were awarded to minority firms. Altogether it was expected that about $273 million in contracts would go to minority firms before completion of the project.

United States Coast Guard

The United States Coast Guard is responsible for enforcing or assisting in the enforcement of federal laws on waters subject to the jurisdiction of the U.S. These laws govern navigation, shipping, and other maritime operations and the related protection of life and property. The Coast Guard also provides and coordinates maritime search and rescue facilities for marine and air commerce. Other responsibilities include — promoting the safety of merchant vessels, conducting oceanographic research, furnishing icebreaking services, and developing, installing, maintaining, and operating aids to maritime navigation. One further responsibility of the Coast Guard is to be ready to function as a part of the U.S. Navy in time of war or national emergency.

In fiscal year 1978, the Coast Guard operated a fleet of 250 cutters, 175 aircraft, and more than 2,700 boats. It also maintained more than 48,000 navigation aids. The missions of the Coast Guard were carried out by 37,045 military and 6,549 civilian personnel. The regular members of the Coast Guard were supported by the 11,374 member Coast Guard Reserve and by 43,000 civilian volunteers in the Coast Guard Auxiliary.

Especially notable accomplishments during the year included: the rescuing of approximately 4,500 people from life threatening situations; successful Antarctic operations by the new icebreaker, POLAR STAR, with icebreaking capability superior to any previous U.S. icebreaker; and completion of specifications for the conversion of certain aids to navigation to solar power.

Search and Rescue

The search and rescue (SAR) program is a traditional Coast Guard mission. It accounts for approximately one-third of the Coast Guard's operating expenses and manpower use. The objective of the program is to minimize loss of life, personal injury, and property damage in the maritime regions of the U.S.

Servicewide, SAR facilities had experienced a 6 percent annual growth in the demand for SAR services over the past 10 years, and this trend continued in fiscal year 1978. During the year, the Coast Guard responded to 80,000 calls for assistance. Approximately 4,500 people were rescued from life threatening situations and more than 194,000 people were aided in other ways. The estimated value of the property which was assisted exceeded $2.8 billion.

The trend toward the increased use of alerting and locating devices such as emergency position indicating radio beacons continued. The increased use of these devices showed great promise, both in saving lives and property which might otherwise be lost and in avoiding long and costly searches for distressed vessels.

During the year, the Coast Guard and the Department of State conducted talks with the Cuban Border Guard and Foreign Ministry. The talks led to improved communications during both search and rescue and drug enforcement incidents. Additional improvements in communications resulted from the efforts of the State Department's U.S. Interests Section in Havana.

As the beginning of an effort to enhance the ability of the Coast Guard Auxiliary to assist the Coast Guard in search and rescue activities, funds were distributed for the purchase of specialized SAR equipment for use by the Auxiliary. Continued provision of equipment to the Auxiliary was planned.

In an effort to improve its safety services to the boating public, the Coast Guard began monitoring citizens band (CB) radio communications in the summer of 1978. Over 200 Coast Guard search and rescue stations nationwide were equipped with CB radios. While CB has a very limited range and is much less reliable than other maritime safety systems, the use of CB made the Coast Guard response to a significant number of recreational boating distress cases faster and more effective. During the peak boating season, the Coast Guard received an average of 2,800 requests for assistance per month on CB.

Ice Operations

The Coast Guard's domestic icebreaking forces contributed significantly to the continuance of maritime commerce throughout the winter on the upper Great Lakes. In addition, the first of a new class of icebreaking tugs was launched. With regard to river icebreaking, the testing and evaluation of two air cushion vehicles was completed on the Illinois River, as part of the Coast Guard's continuing investigation of nonconventional and innovative icebreaking techniques and equipment. At the end of the fiscal year, the results of the test were being evaluated.

Polar icebreakers successfully fulfilled their annual missions of scientific and logistic support in the polar regions. While operating in the Antarctic, the new POLAR Class icebreaker, POLAR STAR, demonstrated an icebreaking capability superior to any previous U.S. icebreaker. Her sister ship, POLAR SEA, successfully completed her first operational mission in the Artic.

Aids To Navigation

Coast Guard radionavigation systems in operation during the year included 29 Loran-C stations, 5 Loran-A/C stations, 23 Loran-A stations, 4 OMEGA stations, and 197 radiobeacons.

Both Loran-A and Loran-C transmit pulses which can be used by a receiver to calculate position by triangulation, based on pulse arrival times. Loran-C, which operates at a lower frequency, has greater range and greater accuracy. OMEGA transmitters operate at an even lower frequency; and position location is still determined by triangulation, but is based on phase comparison. OMEGA has greater range than Loran-C, but is less accurate. Radiobeacons are merely nondirection radio transmitters whose signals can be used to obtain a bearing or a line of possible positions.

The phasing-out of Loran-A began with the disestablishment of six U.S. operated overseas stations. Additionally, the Loran technical assistance detail at Manila was disestablished. Construction of a Loran-C station at Seneca, New York, was completed and Loran-C service in the northeastern U.S. was expanded. Construction started on a Loran-C station at Baudette, Minnesota.

During the year, the Coast Guard assumed U.S. operational and maintenance responsibilities for the OMEGA system. By the end of the year, coverage and accuracy of the OMEGA system in the western Pacific region was validated.

The lighthouse automation and modernization program continued, with the automation of seven more stations during fiscal year 1978. In all, 110 lighthouses were scheduled to be converted to unmanned operation. The benefits derived from this project included the elimination of isolated and hazardous duty stations, reduced personnel requirements, and a reduction in logistics support requirements.

Specifications were completed for the conversion of 6 Florida reef lights to solar power systems. Xenon flashtubes were to be used at the lights, to reduce average power consumption while providing a signal with a visual range of 19 miles. Storage batteries were also to be installed which would provide up to 15 days of standby "no sun" power.

Modifications were completed on the fast water buoys that were being installed on sections of the Arkansas and Mississippi Rivers. These 4-foot hemispherical plastic buoys were designed to withstand currents as high as 8 miles per hour and to replace conventional steel buoys which tend to submerge under similar conditions.

International Affairs

The Coast Guard's fiscal year 1978 international activities included numerous ship visits to foreign ports, hosting foreign visitors at various Coast Guard commands, and training personnel of other nations.

During the year, Coast Guard ships made 94 visits to ports in Canada, the Bahamas, Europe, Africa, South America, and the Far East. Over 250 foreign nationals representing 24 maritime nations visited Coast Guard facilities in 73 separate delegations; and Coast Guard commands provided training for 70 foreign students representing 24 countries.

Coast Guard personnel participated in numerous international conferences and symposiums, including international conferences on tanker safety and pollution prevention and on the training and certification of seafarers. The Coast Guard also sent advisory teams to Iceland, Egypt, and Colombia; participated in negotiations for the use of foreign property for such Coast Guard facilities as radionavigation transmitters; and was involved in the initiation of bilateral agreements dealing with such subjects as icebreaking, Loran stations, vessel traffic systems, and law enforcement.

Enforcement of Laws and Treaties

Coast Guard law and treaty enforcement activities continued to increase during the year. The activities are conducted principally in coastal waters and in the high seas adjacent to the coasts of the U.S. The purpose is to enforce domestic laws, as well as international agreements to which the United States is party. Drug interdiction efforts and enforcement of laws protecting domestic coastal fisheries are the most significant.

Fisheries law enforcement activities resulted in

2,652 vessel boardings and the seizure of seven vessels. General law enforcement activities, primarily drug interdiction, resulted in the seizure of 130 vessels and of contraband with an estimated street value of $1.2 billion.

Commercial Vessel Safety

Continued emphasis on reducing marine environmental damage, casualties, and occupational and health hazards resulted in more comprehensive and far reaching marine safety programs.

In less than a year's time, crude oil washing was developed from a tank cleaning procedure practiced by a few major oil companies to an internationally accepted method of reducing operational oil pollution. The Coast Guard completed an evaluation of the costs and benefits of crude oil washing. The resulting report spelled out the advantages of the procedure, which is a safe and effective way to reduce operational oil pollution as well as a way to clean cargo oil tanks in an economical manner.

Also completed during the year was a study which indicated a need for new tank barges to be constructed with double hulls. Additionally, it showed that, if the oil pollution problem from tank barges was to be brought under control in a timely manner, the existing tank barge fleet would also have to be modified. Upon completion of the study, the Coast Guard began regulatory action to reduce pollution from tank barges.

An international conference on tanker safety and pollution prevention was held in London in February 1978 under the auspices of the Intergovernmental Maritime Consultative Organization (IMCO). As a result of the conference, new and important measures were developed to improve ship safety and to prevent marine pollution from tankers. In addition, the conference adopted changes to the international system of inspection and certification of ships which were expected to result in substantial improvements in maritime safety and marine environmental protection.

Another international conference, on training and certification of seafarers, was held in London in June and July 1978, again under the auspices of IMCO. This conference established an international convention on standards of training, certification, and watchkeeping for seafarers. The standards included basic requirements for training, certification, and watchkeeping for masters, officers, and crews of seagoing merchant vessels.

The two conferences resulted in international acceptance of a major portion of the U.S. proposals on tanker safety and crew qualification and further improved the position of the U.S. as a leader in the area of international maritime safety.

A panel of experts on liquefied natural gas was established in 1978, through a contract with the National Academy of Science. The panel was to evaluate existing liquefied natural gas technology and research and to suggest any additional areas that might need to be addressed.

During the year, regulations were issued to implement the provisions of the international convention for safe containers. In addition, a notice of proposed rulemaking was published for the purpose of setting maximum maritime personnel exposure levels for benzene vapors.

A joint Coast Guard and Occupational Safety and Health Administration task force was established to formulate health standards for maritime personnel. Assistance was also given to the U.S. Public Health Service in its efforts to establish a seamen's health improvement program.

During the year, the Coast Guard expanded its program dealing with outer continental shelf oil and gas activity, to provide comprehensive controls to enhance safety of operations, personnel safety, and the protection of the environment. New standards were to be implemented for mobile drilling vessels and for commercial divers. Passage of the Outer Continental Shelf Lands Act Amendments of 1978 added Congressional mandates for safety and increased the Coast Guard's regulatory role.

The Coast Guard's marine safety information system entered the prototype development phase as a result of a contract awarded in January 1978. This phase was to be followed by a field test and evaluation phase, leading to system implementation. The primary objective was to develop a system which could be used to maintain current ship inspection and ship safety records, so the information could be used to improve compliance with safety standards.

Recreational Boating Safety

The Coast Guard's boating safety program is part of an effort to reduce fatalities, injuries, and property damage among the 14 million boats and 57 million people who go boating annually. A grant program provides funds to state boating authorities to encourage greater boating safety activity at the state and local level. In fiscal year 1978, all but three jurisdictions (Alaska, American Samoa, and the Northern Marianas Islands) participated in the program. Grants awarded during the year totaled $5.8 million.

During the year, the Coast Guard monitored 169 recall campaigns undertaken by various manufacturers to correct potential hazards or to modify boats which failed to comply with applicable federal safety standards. At the close of the year, 101 campaigns remained open, potentially affecting 36,628 units. Forty-five boats were tested by an independent testing facility, under contract to the Coast Guard, and preliminary test results indicated that 18 of the boats failed to meet one or more of the applicable federal standards.

Four new boating safety regulations or modifications to existing regulations were issued during the year. Two of the regulations dealt with boat numbering. The other two involved fuel and electrical system standards. In addition, four important new regulations were under development, involving visual distress signals, standards for boat ventilation systems, first purchaser list requirements for marine dealers, and protection from outboard motors starting while in gear.

The boating safety program was greatly aided by the support of the Coast Guard Auxiliary. During the year, Auxiliary members conducted safety courses for approximately one-half million people and made courtesy examinations of about 300,000 boats. They were credited with saving 1,083 lives, assisting over 61,000 people, and assisting or saving property valued at about $389 million.

Port Safety

A Coast Guard vessel traffic service began operations in Port Valdez and Prince William Sound on July 25, 1977. The service is an important part of the marine leg of the Trans-Alaskan pipeline system. By the end of the year, it had assisted tank vessels in making more than 400 accident free visits to Port Valdez. All 5 of the Coast Guard's vessel traffic services were being codified and made mandatory. However, at the end of the year only the Puget Sound and Prince William Sound services had been made mandatory.

The navigation safety regulations, issued under Title I of the Ports and Waterways Safety Act of 1972, were amended to require an independent second radar for vessels over 10,000 gross tons. In addition, a proposed list of waters to be designated as confined or congested had been completed.

Marine Environmental Protection

The Coast Guard has broad responsibilities for protecting the marine environment and for reducing oil pollution. To assist in carrying out these responsibilities, the Coast Guard prepared several reports, including a study of a fee collection mechanism for a comprehensive oil pollution fund, a national inventory of the pollution equipment available from all private and public sources, an equipment siting study, and an extreme weather study.

During fiscal year 1978, a revised draft for a comprehensive manual on methods of dealing with oil spills was presented to the ninth session of the Marine Environment Protection Committee of the Intergovernmental Maritime Consultative Organization. Meanwhile, implementation of the field oil identification laboratory system was continuing. Operational control of the central oil identification laboratory was transferred from the Research and Development Center in Groton, Connecticut, to the Coast Guard Oceanographic Unit in Washington, D.C.

As part of a continuing attempt to improve the equipment used to respond to oil and hazardous substance spills, hazardous chemical protective clothing was developed for use in cleanup activities. In addition, the hazards assessment computer system, which provides chemical guidance for response activities, was first used operationally in January 1978; and a prototype zero relative velocity skimming device, designed to recover spilled oil in fast current, was completed. An improved open water skimming device for oil recovery was also developed.

During the year, the Coast Guard responded to two major spills, one off the coast of Chile and the other off the coast of Brazil.

Public Law 95-372, enacted on September 18, 1978 gave the Department increased responsibility for safety programs connected with offshore oil activities as well as for administration of a pollution fund related to those activities. The fund would provide compensation to those suffering economic loss as a result of outer continental shelf oil pollution.

Deepwater Ports

The Texas Deepwater Port Authority, an agency of the State of Texas, submitted an amendment to the original application for the deepwater port license which was offered to SEADOCK, Inc. The original license provided for oil company consortium ownership. The amendment changed this provision to allow public ownership. The proposed deepwater port would serve Gulf Coast and Midwest refineries.

Obstructive Bridges

During fiscal year 1978, 246 permits to construct new bridges or to modify existing bridges were issued. In addition, 30 special drawbridge regulations were issued.

Pursuant to the Truman-Hobbs Act, an order to alter an obstructive bridge was issued on the New Jersey Highway 88 Bridge across the Point Pleasant Canal at Point Pleasant, New Jersey. Construction began on the obstructive Chicago, Milwaukee, St. Paul, and Pacific Railroad Bridge across the Mississippi River at Hastings, Minnesota. Construction was completed on the following formerly obstructive bridges: The Seaboard Central Gulf Railroad Bridge across the Savannah River at Savannah, Georgia; the Union Pacific Railroad Company Bridge across the Columbia River at Kennewick, Washington; and the Seaboard Coast Line Railroad Company Bridge across the Caloosahatchee River at Tice, Florida.

Military Readiness

The Coast Guard coordinates its development and acquisition of aircraft and ships with Navy planners to ensure their compatibility with military requirements. Coast Guard forces represent a significant percent of the total forces dedicated to the task of sea control and to facilitation of waterborne transportation in national defense. During the year, the Coast Guard continued its participation in the Defense Department's worldwide military command and control system. In addition, six Coast Guard high endurance cutters engaged in joint operations with other naval forces during fleet exercises and twenty-one Coast Guard cutter crews underwent refresher training at Navy training facilities.

In an effort to reduce training costs, the Coast Guard was attempting to increase its use of simulators. Simulators were under development for the 41-foot utility boat and for the command display and control system on medium endurance cutters. The simulators were expected to improve Coast Guard professionalism and to enable units to maintain a high state of readiness without significantly increasing their operating costs. Additionally, the use of simulators was being examined as a means to reduce expenditures for small arms training.

Cutter Construction and Maintenance

At the end of the year, the 140-foot harbor tug program was proceeding on schedule. The initial cutter, the KATMAI BAY, was scheduled for delivery in Buffalo, New York, during December 1978. Three more cutters were to be delivered at three month intervals. A contract award for two additional cutters was imminent.

A contract for the 270-foot medium endurance cutter program was awarded on December 30, 1977. The contract called for delivery in three years for the first unit, with three more units to be delivered at four month intervals. Both the harbor tugs and the medium endurance cutters were being built by Tacoma Boat Building Company.

The 160-foot construction tender SAGINAW was delivered on February 6, 1978 and commissioned on April 26, 1978. The SAGINAW was the last of four cutters of its class.

The 400-foot icebreaker POLAR STAR, the first of its class, experienced propeller and longitudinal shaft vibration problems during its otherwise successful 1977–78 deployment to Antarctica. By the end of fiscal year 1978, corrective modifications had been accomplished on the POLAR STAR and were underway on its sister ship, the POLAR SEA. Additional diagnostic tests were planned for the POLAR STAR during its 1978–79 deployment in Antarctica.

A program of machinery modernization and living space renovation was being pursued for older cutters to extend their service lives. In addition, preventive maintenance systems were implemented during the year for the 378-foot high endurance and 210-foot medium endurance cutter classes. Preventive maintenance programs were being prepared for other major cutter classes, and programs for two classes of small boats were started during the year.

A program of major modifications to the main propulsion diesel engines aboard the 378-foot high endurance cutters continued throughout the year. The modifications were resulting in a fifteen percent reduction in fuel consumption.

By the end of the year, oil pollution abatement equipment had been installed on over 99 percent of the cutter fleet. The equipment gave the fleet the capability to separate oil from water, to store the dirty oil for shoreside disposal, and to meet Environmental Protection Agency discharge standards.

A program to improve firefighting capabilities aboard cutters continued throughout the year. State of the art systems using dry chemicals, halogens, and foam were being installed.

Boat Construction

Thirty 41-foot utility boats were constructed during fiscal year 1978. By the end of the year, a total of 149 of the new boats had been delivered throughout the Coast Guard, to replace the aging 40-foot utility boat fleet. Approximately 50 more of the boats were to be built.

A prototype 30-foot surf rescue boat was built and was evaluated at the following Coast Guard Stations — Cape Disappointment, Washington; Grays Harbor, Washington; and Tillamook, Oregon. The boat was found to have sufficient power, and its speed, maneuverability, and responsiveness were found to be outstanding.

Shore Construction

The objective of the Coast Guard's shore construction program is to provide the necessary facilities to support Coast Guard operations, personnel, and equipment.

In fiscal year 1978, a total of $34 million was obligated for shore construction. This included contracts for 25 major projects totaling $25.2 million. Survey and design funds totaling $990,000 were also obligated, in support of future year projects.

Major shore construction projects completed in fiscal year 1978 included: a new search and rescue station at Destin, Florida; a new aviation technical training facility at Elizabeth City, North Carolina; family housing at Arcata, California; and renovation of the Pacific Area communications center at San Francisco, California.

Aircraft Procurement

Two Falcon 20G aircraft (designated HU-25A by the Coast Guard) were delivered to the Falcon Jet Corporation Plant in Little Rock, Arkansas, for Coast Guard modifications and certifications. The Coast Guard prototype was assembled and test-flown in August. Due to engine problems, the first production model aircraft was not expected to be delivered until early in fiscal year 1980. Meanwhile, the seventeen C-131A aircraft obtained from the Air Force for interim use as medium range surveillance aircraft were operating at field units.

In March 1978, a request for proposals for a short range recovery helicopter was released. In June, Coast Guard and Navy pilots completed flight evaluations of the three aircraft which were offered. Preliminary evaluation of the proposals was completed in September. Contracts were to be awarded in mid-1979.

Research and Development

The primary emphasis of Coast Guard research and development efforts continued to be on marine safety and environmental protection. Environmental protection projects completed or in progress during the year included: construction of a prototype oil removal device for use in fast currents; development of prototype sensor subsystems to be used in remotely detecting and identifying oil and hazardous substances from Coast Guard aircraft in all conditions of visibility; continued development of ice and cold weather oil spill response techniques; development of special response techniques for hazardous chemicals; and completion of the development of an operational ocean dumping surveillance system prototype. In addition, final modification and testing of a prototype equipment delivery sled were completed. The sled, designed to increase the Coast Guard's ability to deliver oil response equipment to a spill in a timely and efficient manner, also appeared to have potential for use in search and rescue and aids to navigation operations.

Marine safety projects included: development of Loran-C for precision navigation in harbors; preliminary design of a computer model for aids to navigation system configuration and performance evaluation; evaluation of solar power supplies for navigation aids; evaluation of air cushioned vehicles for icebreaking on inland rivers; and development of a computer model of the Labrador current for iceberg movement prediction. Work continued on development of modular components for a computer-based vessel traffic system.

A number of technical studies were also conducted. They included examining the feasibility of using simulators for licensing deck hands, examining toxic and flammable vapor protection techniques for tankermen, and investigating the use of a towboat simulator to evaluate safety standards. The development of a prototype marine safety information system was completed with test and evaluation scheduled for fiscal year 1979. The system would be used to store and retrieve safety related information on vessels and facilities.

In support of operational missions, a VHF-FM radio beacon for use in search and rescue incidents within 20 miles of the coast was successfully demonstrated; development of a prototype wide area illumination system for helicopter night searches was initiated; testing began on a prototype radar device for use in identification of licensed fishing vessels in the 200 mile zone; and the development of an air deliverable dewatering pump was completed.

Coast Guard Reserve

Although it is the smallest component of the nation's military reserve, the Coast Guard Reserve has been one of the most successful. The augmentation program, in which approximately 65 percent of a reservist's time is spent performing hands-on functions for active Coast Guard commands, continued to provide excellent mobilization training while supporting the peacetime missions of the regular Coast Guard. Reserves provided full manning for one Atlantic and three Great Lakes search and rescue stations during the summer boating season.

Civil Rights

During the year, the two year mandatory formal awareness training program for all military personnel and civilian supervisors was completed. In addition, discrimination complaint procedures were established for the 43,000 members of the Coast Guard Auxiliary and the 11,000 members of the Coast Guard Reserve. The total number of people subject to the Coast Guard's military discrimination complaint process was in excess of 100,000 and included regular, reserve, and auxiliary members and dependents of active duty personnel. Military discrimination complaints appeared to be increasing, with 3 cases being investigated at the beginning of the year and 10 cases at the end of the year. Boston North End area harassment and attacks on Black Coast Guard personnel, which were a serious problem in fiscal year 1977, diminished considerably.

In May 1977, the Coast Guard had announced that Coast Guard women would be assigned to afloat and isolated duty. At that time, the assignments were limited to two of the Coast Guard's newer vessels, both 378-foot high endurance cutters, and selected Loran stations. In addition, all enlisted ratings were opened to women except those classified as being combatant in nature — sonar technician, fire control technician, and gunner's mate. In August 1978, this policy was amended to remove all restrictions on the ratings which women might pursue. In addition, women became eligible for assignment to any Coast Guard unit which had adequate privacy in berthing and personal hygiene areas.

During the year, four full-time civilian equal employment opportunity positions were filled, bringing to 11 the total number of full-time civilian counselors assigned to field units. Numerical recruitment and promotion goals and timetables were continued, as a means of improving the overall utilization of civilian Hispanics, Blacks, other minorities, and women. Five evaluations of field unit programs were conducted, focusing on implementation of special emphasis programs, discrimination complaint systems, utilization of minorities and women, and general supervisory and employee attitudes and awareness. Complaint regulations were revised to increase the emphasis on informal resolution of complaints. As a result, civilian equal employment opportunity complaints on hand were reduced from 31 to 21 during the year.

Fiscal year 1978 military employment totaled 37,045, of whom 4,582 or 12.4 percent were minority and 744 or 2.0 percent were women. Civilian employment totaled 6,549, of whom 2,184 or 33.3 percent were minority and 1,583 or 24.2 percent were women.

Health Services

The Coast Guard's health services support program continued to make progress toward its goal of self-sufficiency in the delivery of health care to Coast Guard personnel. The fiscal year 1978 budget included funds to provide for hospitalization of active duty members as close to their duty stations as possible. As part of this effort, an agreement was signed with the Veterans Administration for the use by Coast Guardsmen of Veterans Administration health care facilities.

Procedures were instituted to improve the physical screening of personnel applying for entry into the Coast Guard, in order to lower the rejection rate at the recruit training centers and the officer candidate school.

Federal Aviation Administration

The primary responsibility of the Federal Aviation Administration (FAA) is ensuring the safety of air transportation. Among FAA's significant safety accomplishments during the year were the continuing reduction in the air carrier fatality rate, the upgrading of air commuter and air taxi regulatory standards, and the continuing success of the anti-hijacking program.

In addition to its responsibilities for regulating civil aviation so as to ensure its safety, FAA has also been responsible for fostering its development.

Nothing better reflects FAA's success in carrying out those responsibilities than the general public's growing use of air travel. During calendar year 1977, U.S. certificated route air carriers in scheduled *domestic* passenger service carried 222.3 million passengers 166.4 billion passenger miles, both record highs. In scheduled *international* passenger service, U.S. certificated route air carriers carried 18 million passengers 39.8 billion passenger miles. An additional 2.8 million passengers were carried by U.S. supplemental air carriers on domestic and international routes; and 10.8 million passengers were carried by U.S. commercial operators of large aircraft. General aviation also reached record levels of activity, with 184,000 active aircraft accumulating 35.8 million flying hours, compared to 33.9 million in 1976.

These new peaks of aviation activity were reflected in increased utilization of FAA facilities. FAA's air route traffic control centers handled 28.1 million aircraft flying under instrument flight rules, exceeding the fiscal year 1977 count by 8 percent. Aircraft takeoffs and landings reported by FAA airport traffic control towers totaled 67.1 million, an increase of 0.5 percent over the 66.7 million reported in fiscal year 1977. Instrument operations at airports totaled 33.5 million, up from 31.5 million in fiscal 1977; and services provided at flight service stations increased by 2.1 percent, to 64.6 million.

Aviation Safety

First and foremost among FAA's statutory responsibilities is the regulation and promotion of aviation safety. The improving long-term safety trend continued during calendar year 1977, despite the fact that the year was marred by aviation's worst disaster ever — the ground collision between two chartered wide-body jets at Tenerife, in the Canary Islands, that claimed 580 lives. With the single exception of nonscheduled revenue service (the category of the Tenerife collision), U.S. air carriers established an excellent safety record in all categories of passenger service. U.S. certificated route air carriers in scheduled domestic service suffered only two fatal accidents (compared with an average of 3.2 during the preceding 5 years) and recorded a passenger fatality rate of 0.038 per 100 million passenger miles flown (compared to an average rate of 0.081 during the preceding 5 years). In scheduled international passenger service, U.S. certificated route air carriers enjoyed a fatality-free year — the second such year among the last three years. Supplemental air carriers engaged in passenger operations continued their virtually unmarred safety record during the seventies by recording their seventh consecutive fatality-free year. General aviation safety also continued to improve, showing a declining fatal accident rate for the sixth consecutive year.

FAA and the National Aeronautics and Space Administration (NASA) continued their joint effort to enhance aviation safety through the aviation safety reporting program. During fiscal year 1978, approximately 5,000 reports were submitted to NASA, which resulted in NASA issuing 109 alert bulletins to FAA pertinent to safety considerations in the national aviation system.

Regulations

FAA completed revising and updating Part 135 of the Federal Aviation Regulations, bringing to an end the largest and most comprehensive rulemaking project ever undertaken by the agency. The revised rules, which were to go into effect on December 1, 1978, would upgrade the operational and maintenance standards of the commuter airline and air taxi industry, the most rapidly growing aviation segment during the 1970's. More than 200 commuter airlines and 2,300 air taxi operators would be affected by the new rules, which would assure this industry an adequate level of safety while allowing it the necessary operational flexibility to meet market demands. The revisions would bring the rules governing the commuter and air taxi industry more closely in line with those governing the trunk and local service air carriers, set tougher requirements for pilots, upgrade maintenance standards, and require additional safety equipment on larger commuter and air taxi aircraft.

In other regulatory actions, FAA issued seven sets of amendments containing 456 individual changes to its airworthiness regulations. It also issued five sets of amendments containing 157 individual changes to its rules governing operations. These amendments were the result of comprehensive reviews of FAA airworthiness and operating rules.

Aviation Medicine

In 1973, FAA began a study to determine the nature and extent of health changes in air traffic controllers and how these changes might be predicted. More than 400 male controllers from the Boston and New York areas volunteered for the study, which was conducted by the Boston University School of Medicine. The study, which was completed during fiscal year 1978, found these controllers to be as healthy as men of similar ages in the general population, except for a higher than normal rate of hypertension. It also found that controllers experienced a relatively high rate of "impulse control difficulties," such as an inability to control anger. These findings contrasted with the generally held aviation industry view that controlling air traffic was associated with an unusually high incidence of ulcers, psychiatric disorders, and other stress-related medical problems.

During the winter of 1976, it was concluded that complaints of eye irritation and coughing by passengers and crew members on certain long-distance high-altitude flights were due to the presence of atmospheric ozone in the aircraft cabin. As a result, FAA began investigating the effects of this gas on human physiology in order to determine acceptable levels of tolerance. During 1978, experiments to check the effects of ozone on respiration, heart rate, blood chemistry, vision, and performance were conducted on 27 volunteers at a simulated altitude of 6,000 feet. An ozone concentration of 0.2 parts per million by volume was used during an exposure time of four hours. During the experiment, the subjects exercised to simulate the physical effort required of cabin attendants during the performance of their duties. While such symptoms as dry throat, running noses, and teary eyes were observed in a number of cases, no effect was observed on the other parameters under study. Experiments using a higher level of ozone were to be conducted later. Meanwhile, FAA developed a handbook for pilots that established guidelines for flight planning during periods of high ozone occurrence and an advisory circular for distribution to the public on how to deal with ozone in flight. At year's end, FAA was preparing to issue a notice of proposed rulemaking requiring airlines to limit ozone concentrations in aircraft.

Aviation Security

Despite FAA's success in deterring aircraft hijacking, air piracy and sabotage continue to pose a serious threat to civil aviation operations. The 31 hijacking attempts worldwide during fiscal year 1978 represented an increase of approximately 10 percent over the 28 reported in the previous fiscal year. Ten of the 31 hijacking attempts were against U.S. aircraft, an increase of 100 percent over fiscal year 1977.

Attempts by individuals to carry concealed weapons through screening points also showed a slight increase, with over 2,100 firearms detected in passenger screening operations, compared to slightly under 2,000 the year before. In 890 cases, the firearms were detected under circumstances which led to the arrest of the individuals involved. In addition, about 600 serious bomb threats were directed against aircraft and 345 against airports. These threats resulted in numerous flight delays, diversions, and airport evacuations.

FAA took steps during the year to deal with the elimination of several security safeguards as the result of changes instituted by the Civil Aeronautics Board in the qualifying requirements for charter flights. In particular, the Federal Aviation Regulations were revised to require operators of public charter flights to adopt security programs similar to those required of air carriers in scheduled operations, including the screening of all passengers and all carry-on luggage.

On the international scene, the Bonn declaration on hijacking, calling for the termination of air service to countries that refuse to extradite or prosecute hijackers or to return hijacked aircraft, was adopted on July 17, 1978. FAA was working closely with the U.S. State Department and participating foreign governments in the implementation of this agreement.

Airway Facilities

In April 1978, a worldwide conference of the All Weather Operations Division of the International

Civil Aviation Organization selected the time reference scanning beam microwave landing system (MLS) as its international standard. The new landing system, which had been under development since 1971, was expected to replace the very high-frequency (UHF) instrument landing system, which became the international standard in 1949. MLS was designed to overcome the limitations which restricted the usefulness of the old system and to provide the operational and economic benefits associated with a universal all-weather approach and landing system. The new system was expected to be capable of meeting the needs of civil and military aviation to the year 2000 and beyond.

FAA was engaged throughout the year in installing and putting into operation its conflict alert system — a computer software system designed to look ahead along the flight paths of controlled aircraft and, if two or more planes appeared to be approaching each other at less than standard separations, to alert the controller to the potential conflict by an indication on his radar display. During 1978, the system became operational at 51 terminal facilities; and FAA expected to have it installed and operating at eleven more terminals early in calendar year 1979.

The effort to modernize FAA's flight service station system continued. A number of significant milestones were reached during the year: (1) the master plan and the acquisition plan for the flight service automation system were approved; (2) a request for proposals for the automated system was issued; and (3) a computer-generated voice response system, utilizing a push-button telephone to retrieve selected briefing information, was publicly demonstrated.

Altogether, FAA obligated $168 million during the year for the procurement of new airway facilities and equipment. Near the end of the year, work began on a new technical and administrative headquarters building for FAA's National Aviation Facilities Experimental Center, at Atlantic City, New Jersey.

Airport Development

Of special importance in sustaining and stimulating the growth of civil aviation is the construction and improvement of airports. During the year, FAA approved 242 airport planning grants totaling $14.3 million. It also approved $552.9 million in airport development grants.

FAA completed and delivered to Congress, on January 1, 1978, the first revision of its 10-year national airport system plan. The revision, which covered the period 1978-1987, identified airport development needs costing an estimated $10.6 billion.

Environmental Protection

In carrying out its responsibilities to protect the environment, FAA —

- Adopted regulations governing the operation of supersonic transports in the U.S. The rules imposed limits on the operation of Concordes produced before January 1, 1980, and required other SST's to comply with the Stage 2 noise standards set in Part 36 of the Federal Aviation Regulations. The new rules also provided added protection from sonic booms for U.S. coastal areas.
- Issued grants totaling $3.4 million to 25 airports participating in a demonstration program designed to reduce the effects of aircraft noise on communities by encouraging noise control and land-use compatibility planning as part of airport master plans.
- Contributed to a variety of technical studies by International Civil Aviation Organization groups engaged in developing international noise standards for future SST's, helicopters, and conventional turbojets and international standards for aircraft exhaust emissions.
- Developed and distributed two environmental information kits. One kit described local community prerogatives for maintaining compatibility between airports and their environments. The other outlined the procedures recommended by the Department of Transportation for use by airport proprietors and local communities in developing and implementing noise reduction programs.

Loan and Insurance Programs

At the end of the fiscal year, 24 loans were outstanding under the aircraft loan guarantee program. The total outstanding balance on the loans was $187.9 million.

FAA's total unfunded contingent liability under the aviation war risk insurance program came to approximately $17 billion. A total of 436 aircraft were covered under the war risk program.

Administration

A number of organizational changes designed to promote quicker decision-making, enhance accountability, and improve overall management effectiveness were instituted during the year:

- The Associate Administrator for Policy Development and Review was redesignated the Associate

Administrator for Policy and International Aviation Affairs and given overall responsibility for planning, policy, environment, energy, and international aviation.

- The Office of International Aviation Affairs, which had previously reported directly to the Administrator, was placed under the Associate Administrator for Policy and International Aviation Affairs.
- The Office of General Aviation was abolished and its aviation education responsibilities were transferred to the Office of Aviation Policy.
- The Office of Environmental Quality was renamed the Office of Environment and Energy.

In another administrative activity, the implementation of revised procedures for acquiring major hardware and software systems was completed.

Personnel

In May 1977, a reduced hiring program was instituted at FAA headquarters. This was followed by a field placement program, permitting headquarters employees to voluntarily transfer to field organizations and facilities. The two programs reduced the headquarters staff by nearly 400 employees, while strengthening the field organizations.

The number of full-time FAA employees dropped from 57,379 at the end of fiscal year 1977 to 56,726 at the end of fiscal year 1978. The number of minority employees also decreased, from 6,030 to 5,982; but minority employees made up 10.79 percent of the agency's work force at the end of fiscal year 1978, compared to 10.76 percent at the end of fiscal year 1977. There was a drop in both the percentage and number of women in the agency's work force — from 13.47 percent (7,719) at the end of fiscal year 1977, to 13.30 percent (7,546) at the end of fiscal year 1978.

In other personnel developments — (1) FAA and the Professional Air Traffic Controllers Organization reached an agreement on a new three-year contract; (2) the Civil Service Commission issued a new position classification standard for flight service station employees, which resulted in the upgrading of 244 employees and the downgrading of 180 others; and (3) an improved training program was implemented for all new flight service specialists.

Federal Highway Administration

The federal-aid highway program provides over $7.5 billion annually to the states to assist in the construction, reconstruction, and management of the nation's street and highway system. The financial assistance is provided through a number of categorical programs designed to meet specific objectives, all of which contribute to the goal of improved transportation services. Some of the major activities carried out by the Federal Highway Administration (FHWA) in its efforts to reach those objectives are described in this chapter.

Especially notable accomplishments during the year included: Providing about $7.5 billion in federal highway aid; making management and fiscal information system improvements which resulted in estimated savings of 105,000 employee hours per year; and increasing commercial motor vehicle inspections by 37 percent.

Federal-Aid Delivery

Completion of the interstate system continued to be an area of major emphasis, with priority given to unopened sections of the intercity portion of the system. As of September 30, 1978, 39,133 miles (92 percent of the 42,500-mile system) were open to traffic. A total of 459 miles, including 337 miles of intercity highway, were put into service during fiscal year 1978; and 1,425 miles were under construction. About $3 billion (40 percent of the total federal funds available) was obligated in fiscal year 1978 for interstate system construction.

Federal highway law allows the withdrawal of certain interstate routes and the substitution of other highway or mass transit projects. During 1978, four such withdrawals were approved, involving a total of 11.4 miles. This brought the total withdrawals since the enactment of this provision to about 110 miles.

The resurfacing, restoration, and rehabilitation (3R) of existing pavements, shoulders, and bridges on both interstate system and other federal-aid highways received increased emphasis in fiscal year 1978. The preservation of the existing highway system (through work that does not require complete reconstruction or that extends the life of existing roads and streets) is often the most cost-effective use of highway funds. The total obligation of federal funds for 3R activities on the interstate system during the year was $167 million.

The special bridge replacement program continued to provide financial assistance to the states for the replacement of deficient or unsafe bridges. During 1978, special bridge funds spent by the states totaled $171 million, and the total number of bridges which had been replaced under this program increased from 1,456 to 1,750. Updated state bridge inventories listed a total of 240,000 bridges on the federal-aid systems, 36,800 of which were considered deficient.

Significant progress was made in the obligation of funds for urban system projects. For the first time, obligations exceeded the annual rate of new apportionments for this program.

Energy Conservation

One of the largest potential energy savings concepts in highway construction and maintenance is the recycling of deteriorated and worn out bituminous pavements. Highway agencies in 30 states participated in pavement recycling demonstration programs on federal-aid projects, with estimated savings of petroleum products equivalent to 300,000 gallons of gasoline. Another potential area for energy conservation in highway construction and maintenance is the use of sulfur, an abundant element that preliminary research has shown can be used to produce a high grade pavement binder material. Many states were also taking advantage of advances in highway lighting design, by converting from mercury vapor lamps to high pressure sodium lamps. Each unit converted produced the same amount of light but used about 45 percent less electrical energy.

Significant progress was made in the promotion and financing of activities that improved the energy efficiency and utility of the highway system and its users. Over $450 million was obligated for measures to improve traffic operations. In particular, the traffic control signalization program showed tremendous potential. Fifty-eight projects were selected for this special program, and preliminary estimates indicated that the smoother traffic flow at the 3,070 improved signals would save more than 2 million gallons of fuel annually. Additionally, these signal projects were expected to reduce hydrocarbon and carbon monoxide emissions significantly.

Under newly expanded eligibility criteria, federal-aid highway funds were available for leasing fringe parking facilities at shopping centers and other private businesses. Some $6.5 million in federal-aid funds was obligated in the first 9 months of fiscal year 1978 to support ridesharing efforts, including acquisition of vehicles for use in commuter vanpool projects. At the end of the year, there were 51 high-occupancy vehicle lane facilities operating in 33 metropolitan areas, and 8 more projects were under construction or in the advanced planning stages.

Red Tape Reduction

Other FHWA activities during the year were aimed at simplifying the overall management of the federal-aid highway program. Almost 200 directives were reviewed, as a result of the recommendations of a regulations reduction task force. Significant results of the review included the cancellation of 15 directives and the revision of 21 others to eliminate nonessential requirements.

As part of a forms reduction campaign, 1,813 forms were reviewed and 690 were eliminated. In addition, continuing efforts to reduce the number of reports made by state governments and the general public resulted in the number of reports required being reduced by 31 percent and the time spent preparing reports being reduced by an average of 17 percent.

Financial management was improved by expediting cash flow to the states through the use of electronic transfers. This technique allowed FHWA to reimburse state highway agencies through electronically transmitted payments to a state designated bank. By the end of fiscal year 1978, 46 of the 55 state highway agencies were using this technique (an increase of 29 states over the end of fiscal year 1977); and the average reimbursement delivery time for the 46 agencies was approximately 3 days.

A study of FHWA's management and fiscal information systems was completed early in calendar year 1977. Of the 140 study recommendations which were adopted by FHWA, 88 had been implemented by the end of fiscal year 1978. FHWA estimated that the adopted suggestions were saving a total of 105,000 employee hours each year.

Highway Safety

FHWA's highway safety activities include providing financial assistance to programs designed to reduce the number and severity of accidents. During fiscal year 1978, the states obligated $500 million in federal funds specifically for rail-highway, high hazard, roadside obstacle, and pavement marking safety improvements. A total of 6,310 projects were involved, and 5,800 were completed. In addition, over $1 billion was obligated from other federal-aid highway categories for safety construction improvements to existing highways, including $360 million from interstate system funds.

FHWA also continued to provide leadership in traffic safety research. About $10 million was obligated for safety research and development projects which were directed toward solving current operating problems, anticipating future needs, and transferring new technology to state and local highway agencies. All of the states and many localities, as well as a number of commercial firms, universities, and associations, participated in the 185 federally supported safety research projects which were active during the year.

In addition, FHWA conducted a nationwide review of recent federal-aid highway projects. The primary purpose of the review was to determine the degree to which FHWA safety policies and concepts were being incorporated in highway construction projects. The review also assessed the progress being made in the safety upgrading of older federal-aid highways. It was concluded that, in general, new highway construction did reflect the latest safety concepts, such as breakaway sign supports and traffic barriers. However, the review found that for federal-aid highways constructed before 1970, a substantial national effort would apparently be required in order to upgrade the safety of those roads to current standards. FHWA initiated a followup program for fiscal year 1979, to ensure that needed actions were taken so that the roads would meet current standards.

Motor Carrier Safety

In an effort to improve the safety of the public and the operating conditions of commercial motor vehicles, FHWA increased its roadside vehicle inspections. In addition to regularly scheduled inspections, "strike force" teams, assisted by state and local governments, were utilized throughout the country. Continued efforts were made to encourage state adoption and enforcement of the inspection regulations used by federal motor carrier safety personnel and state participation in the inspections.

The stepped up inspection activities were reflected in the total number of vehicle inspections during calendar year 1978 (25,695), the total number of vehicles taken out of service (9,978), and the total number of drivers taken out of service (597), as compared to 18,730 inspections, 6,985 vehicles, and 558 drivers in fiscal year 1977. In addition, many motor carriers' extended runs were examined and a reduction imposed because drivers could not complete the trips without exceeding either the national 55 mph speed limit or the hours of service regulations.

During 1978, FHWA proposed a major revision of the federal motor carrier safety regulations pertaining to inspection and maintenance of motor vehicles, in an effort to reduce the number of commercial vehicle defects and defect-related accidents. In conjunction with the Research and Special Programs Administration, regulations were issued which were intended to reduce the possibility of an accident as a result of poor maintenance or repair work on motor vehicles carrying hazardous materials.

Research began in an effort to find cost-effective ways to reduce leakage from overturned cargo tank vehicles transporting flammable liquids. Research also began in an effort to develop criteria for states and local jurisdictions to use in establishing routes for vehicles transporting hazardous materials.

Finally, on May 22, 1978, FHWA issued an advance notice of proposed rulemaking on hours of service. Since the potential economic impact of the proposed rules could be severe to both industry and the general public, FHWA actively solicited oral and written participation by all interested parties. The safety and economic data that was gathered as a result of the notice was to be evaluated and used in formulating regulations which would enhance public safety while minimizing financial impacts.

Civil Rights

Although not a financial assistance program, FHWA's external equal opportunity program continued to be an important part of its activities. The program included three primary areas in which grantees' progress and compliance were measured — minority business enterprise contract awards, minority employment, and contractor and state highway agency employment practices.

Major gains were made in the awarding of contracts and subcontracts to minority business firms in fiscal year 1978, with federal and federal-aid contracts of approximately $125.6 million awarded to such firms, compared to $77 million in fiscal year 1977.

The annual survey of all federal-aid highway projects, conducted in July 1978, indicated that minority employment remained at 23 percent, as total employment increased by 1,871 employees. During the same period, the number of women employees increased by 41 percent, including a 60 percent increase in the participation of women in the skilled crafts. In a FHWA sponsored special training program, approximately 4,500 persons, including 2,477 minority persons, received skills training on federal-aid construction contracts.

In the contract compliance program, 1,177 construction compliance reviews and 83 home office reviews were conducted by FHWA and state compliance personnel. All contracts were either found to be in compliance or were brought into compliance.

FHWA's own minority employment was unchanged, with 864 minority group employees in both fiscal years 1977 and 1978. However, FHWA's total full-time employment increased from 4,878 to 4,930, so the percentage of minority employees decreased from 17.7 percent to 17.5 percent. Female employment increased from 1,366 to 1,379, with the percentage of female employees remaining essentially unchanged, at 28 percent.

Highway Beautification

During the year, $18.5 million was obligated by the states for outdoor advertising control along interstate and primary highways — $13.7 million for billboard removal projects, and $4.8 million for bonus payments. A total of 36,017 nonconforming and illegal signs were removed, bringing the total signs removed since 1965 to 468,918. The states also obligated $5.4 million for the control (screening or removal) of junkyards.

Engineering Services

FHWA provides highway engineering services to other federal agencies and to foreign countries. During fiscal year 1978, 76 construction projects, totaling $64 million, were awarded for other agencies. Management and technical assistance programs were continued in Argentina, Colombia, Costa Rica, Kuwait, Panama, and Saudi Arabia, including the establishment of a comprehensive bridge inspection program in Saudi Arabia.

Training

During fiscal year 1978, FHWA awarded 186 educational grants totaling $600,000 to state, local, and FHWA employees for graduate and undergraduate study in transportation related fields. Also, about 300 short courses were conducted for 8,500 federal, state, and local highway agency employees in such subjects as highway safety, environment, traffic operations, and civil rights. FHWA also assisted 254 representatives from 47 countries who were visiting the U.S. for highway training.

The passage of environmental legislation in recent years resulted in an emphasis on environmental training by FHWA. In fiscal year 1978, 31 one-week courses in six environmental areas were conducted for 880 attendees. The greatest emphasis was placed on the preparation of environmental impact statements, on techniques for historical and archeological preservation, and on the development of skills for communicating effectively with the public. FHWA also continued its training of professionals in urban transportation planning, with about 950 persons attending sessions during fiscal year 1978.

FHWA's tuition grant program continued to provide an opportunity for employees of federal, state, and local transportation agencies to receive undergraduate and graduate training in highway technology. During the year, FHWA awarded 205 educational grants under this program, worth $512,337.

Federal Railroad Administration

The Federal Railroad Administration (FRA) is responsible for planning, developing, and administering programs to achieve safe operating and mechanical practices in the railroad industry. Its responsibilities include enforcement of the federal laws and regulations which promote the safety of railroads.

Significant achievements during fiscal year 1978 included: developing proposed legislation which would lead to regulatory reform for the railroad industry; developing a program to increase productivity at the Buffalo, New York, rail terminal; and issuing regulations which were expected to improve the puncture resistance and fire resistance of railroad tank cars.

Train Accidents

Train accidents have increased since 1966 and there has been a corresponding increase in their cost. Train accidents per million train miles increased by 6.1 percent in 1977, compared to 1976, and by 69 percent between 1967 and 1977. However, after adjusting the monetary reporting threshold for inflation, or when based on ton mileage, the increase in train accidents between 1967 and 1977 was only about 15 percent.

When analyzed by contributing cause, the breakdown of 1977 accidents was as follows: defects in right-of-way or structures (track) accounted for 41.8 percent; human factors, 25.1 percent; equipment failures, 19.9 percent; and miscellaneous causes, 13.5 percent. (A general summary of train accidents and casualty data for calendar year 1977 is given in the Appendix.)

Track is not only the largest contributing cause but also is the most rapidly increasing cause. Track-caused accidents increased by 180 percent between 1967 and 1977, while revenue ton miles increased by only about 25 percent. During the same period there was a 29 percent increase in equipment caused accidents and a 53 percent increase in accidents attributed to human factors.

Hazardous Materials Accidents

In 1977 there were approximately 500 derailments involving hazardous materials tank cars. In those 500 derailments, a total of 1,400 tank cars derailed. Approximately 150 of the cars released hazardous materials. There were four fatalities, 500 injuries (150 of which were serious), and 14 evacuations (involving a total of 19,000 people) attributable to the tank car derailments.

Major rail accidents at Pensacola, Florida, on November 9, 1977, at Waverly, Tennessee, on February 22, 1978, and at Lewisville, Arkansas, on March 29, 1978 (as well as an act of apparent vandalism near Youngstown, Florida, on February 26, 1978) focused national attention on the railroad tank car safety problem. The Waverly, Tennessee, accident resulted in the loss of 16 lives, the hospitalization of about 50 people, and the evacuation of 500 people from their homes.

As a result of the increasing problems involving tank car derailments, regulations were established requiring that all railroad tank cars built after January 1, 1978, be equipped with shelf couplers, steel shields on the ends of the cars, thermal spray coating or insulation, and a full steel jacket. The regulations also required that these safety features be added to existing cars by the end of 1980.

Automated Track Inspection Program

FRA's automated track inspection program is designed to provide FRA track inspectors with information on track geometry, rail defects, and carrier compliance with federal track safety standards. Using data generated by track geometry vehicles, FRA track inspectors conduct on-the-ground inspections of critical areas. Three track geometry vehicles were in use in fiscal year 1978. They were used to inspect 52,000 miles of track.

Regulatory Review Task Force

During the year, FRA formed a task force to improve the soundness and clarity of proposed regulations and to eliminate unnecessary or unduly burdensome regulations. The task force was given three charges: (1) to review existing regulations to ensure economic soundness and necessity; (2) to assess proposed regulations in terms of cost to all affected groups; and (3) to determine the need for any proposed regulation.

FRA also began a series of public hearings in an effort to obtain information which would assist in evaluating the effectiveness of its safety regulatory program. The first hearing was conducted on June 14 and 15, 1978; and its subject was locomotives. The second hearing was held on July 12 and 13, 1978; its subject was freight cars and their safety appliances. A third hearing was held on September 13 and 14, 1978; its subject was power brakes. Future hearings were to cover track and related structures, appliances, and devices; and signal and communications systems.

State Safety Programs

Twenty-six states, with a total of 64 inspectors, participated in the track and freight car inspection activities of the federal-state rail safety program. FRA expected 30 states to be participating by the end of 1979, with 100 inspectors or trainees.

Rail Industry Report

A major report on the state of the railroad industry was scheduled for release in October 1978. The report was titled "A Prospectus for Change in the Freight Railroad Industry." The report was ordered by Congress in Sections 504 and 901 of the Railroad Revitalization and Regulatory Reform Act of 1976. Following transmittal to Congress and release of the report to the public, the Department planned to conduct hearings in eight cities.

The report concluded that continuation of current trends and policies would result in the rail industry facing enormous financial problems within the next decade. To counter these trends, the report indicated a need for — a cutback in regulation of the industry; continuation of actions to restructure the industry and its physical plant; more uniform government policies toward the various modes of transportation; improvements in the management of railroad assets; improved relations between labor and management; and a continued program of limited federal financial assistance.

New England Railroads

The continuing financial decline of the New England railroads, especially the Delaware and Hudson Railway, resulted in much attention being focused on this area. Work began on a study to examine possible ways to restructure the railroads, and to measure the effects of various restructuring alternatives on the New England railroads and the rail industry as a whole.

Regulatory Reform

Work began in mid-1978 to develop legislation which would lead to major regulatory reform for the rail industry. The proposed changes would allow the marketplace to determine the provision of transportation services and would permit railroads, barges, and trucks to compete on an equal basis. Economic studies were underway to determine the effects such actions would have on shippers, carriers, competing modes, and the economy in general.

Coal Transportation

Increasing need for rail transportation of coal led FRA to undertake a preliminary study of the impact of increased coal traffic on urban and rural grade crossing problems. While growing western coal production generated the impetus for the research, it was found that serious problems existed in eastern coal regions as well. As a result, FRA began a study of the feasibility of pooling the output of several small mines so that the output could be moved by unit trains.

Enforcement and Regulation

During fiscal year 1978, FRA collected penalties of $7.5 million for violations of railroad safety statutes and regulations, twice the amount collected in fiscal year 1977, and five times the amount collected in any year prior to fiscal year 1977. In addition, three emergency orders were issued in response to dangerous conditions which existed on railroad properties. FRA also successfully defended a suit challenging its regulations concerning rear-end marking devices.

In connection with the northeast corridor improvement project, FRA reviewed approximately 200 procurement actions and 20 station agreements and also issued a number of required environmental regulations, as well as regulations relating to cost-sharing on nonoperating portions of the project. Altogether, more than 50 environmental impact statements were reviewed during the year.

Modernizing Work Practices

In July 1978, a labor and management project team was established at the Buffalo, New York, rail terminal. The purpose of the team was to develop and test experiments designed to increase productivity. The experiments could involve changes in labor agreements, in management practices, or in government regulations. Buffalo was the fourth major terminal to begin such a project. The other three were St. Louis, Houston, and Chicago.

Labor Management Problems

During 1978, Phase I of a comprehensive railroad industry alcohol abuse study was completed. The study included the design, development, and pilot-testing of a set of interview guides and questionnaires to determine the prevalance and cost of alcohol abuse within the industry.

In addition, extensive work was done in the area of employee training. A national conference on training was held to inform the railroad industry of the various government training programs and resources which were available. As a follow-on to this effort, FRA and the U.S. Office of Education signed a memorandum of understanding to support the training of railroad workers.

Federal Assistance

Federal financial assistance was provided, under Title V of the Railroad Revitalization and Regulatory Reform Act of 1976, to assist in the revitalization of the nation's railroad industry.

During the year, $216.5 million of railroad preference shares were purchased and $85 million in loans were guaranteed. The preference share financing was directed principally to relieving deferred maintenance on high density main lines which were likely to survive any future restructuring of the national rail system. The guaranteed loans were used primarily for freight car and locomotive rehabilitation. The total Title V assistance to railroads since 1976 amounted to $416.3 million.

State Rail Program

During fiscal year 1978, the state rail program expanded considerably, with 48 states participating by the end of the year. Approximately $50 million was provided to the states for a variety of local rail freight service activities, including operating subsidies, branch line rehabilitation or acquisition, and substitute service projects. In March 1978, the Department proposed a new law which would expand the state program by making private railroad lines carrying up to 5 million annual gross ton miles of traffic per mile of track eligible for state aid. This would increase the mileage eligible under the state program from approximately 14,000 miles to nearly 100,000 miles and would give states far greater flexibility in designing and implementing their rail programs.

Northeast Corridor Improvement Project

Fiscal year 1978 was a period of critical review, redirection, and reorganization for the Northeast Corridor Improvement Project (NECIP). The year began with the realization that the implementation master plan of August 1977 was overambitious and was unattainable within the existing program schedule and budget. This understanding, combined with growing concern for the needs of the users of the corridor, led to the Secretary's decision to undertake a redirection effort. In addition to reexamining the program with a view toward greater coordination with corridor users, the redirection effort included a thorough review of the project's features and of the impact of changes in scope, refined cost estimates, and inflation on the authorized NECIP funds.

While the redirection effort was being conducted, design and construction continued on those program elements that were considered fundamental to any program, regardless of the outcome of the redirection effort. Design work reached advanced stages on many sections and on maintenance-of-way bases, the Washington car wash, the Baltimore tunnels, the New Carrollton station, and several major bridge projects. In construction work, the results were mixed, but generally much better than 1977. However, the output of the track laying system had not fully come up to expectations. In addition, the system continued to suffer from problems of inexperience, high work force turnover, and low productivity.

The redirection effort, which began in January 1978, had as its primary goal a greater integration of the needs of intercity, commuter, and freight users of the Corridor. This consideration served as a criterion for evaluating the merits of alternative program options. The redirection studies included definition and coordination of intercity freight and commuter service, operation of the system during the improvement project and after the project is comppleted, Amtrak revenue equipment requirements and operating schedules, the need for maintenance facilities, the required program scope and budget, and a financial evaluation of the final system.

Research and Development

FRA's research and development activities continued to concentrate on near-term improvements in products and processes which would enhance safety, which would improve the economic viability and efficiency of the nation's railroad operations, which would assist Amtrak, or which would reduce the adverse environmental effects of railroad operations. In addition, approximately 8 percent of the total research and development funding was applied to long-term improvements in three areas: advanced systems technology, electrification, and intermodal systems technology. Safety improvement retained the highest overall priority and the most funding (approximately 60 percent).

Fiscal year 1978 research and development activities included:

- Developing final performance specifications and design guidelines for couplers, draft gear, collision posts, and anticlimbers for various types of rail vehicles. The specifications and design guidelines were expected to decrease the probability of serious injury to occupants of a rail vehicle involved in a collision.
- Developing performance specifications for locomotive and caboose windows to protect occupants from vandalism. The specifications were incorporated in an announcement of proposed rulemaking.
- Instrumenting a prototype wayside vehicle inspection station at the Transportation Test Center. The station was to be used to test ways of detecting vehicle safety defects and dragging equipment.
- Continuing operation of the facility for accelerated service testing at the Transportation Test Center. This facility made it possible to obtain the equivalent of 14-16 years of in-service experience in two years of testing.
- Beginning a demonstration project to develop improvements in rail/highway intermodal operations and marketing. The Milwaukee Road operated the new service, which provided four round trips per day between Chicago and St. Paul. The service, which was partially funded by FRA, handled almost 12,000 revenue trailers during its first 16 weeks.
- Completing evaluation reports on six foreign passenger train systems to support equipment acquisition decisions by Amtrak and the northeast corridor project.

Civil Rights

Several events occurred during the year which significantly increased FRA's civil rights and equal employment opportunity responsibilities. Compliance responsibility for federal contractors was consolidated in the Labor Department; but FRA remained responsible for checking compliance by loan and grant recipients. FRA also was given responsibility for investigating all complaints by handicapped persons filed against federally-assisted railroads.

FRA's own employment increased from 705 in fiscal year 1977 to 803 in fiscal year 1978. The proportion of minority employment decreased, from 22 percent (155) in fiscal year 1977 to 19.3 percent (155) in fiscal year 1978. However, minority representation in jobs at GS-13 and above increased from 5.2 percent to 6.3 percent. The proportion of female employment also decreased, from 37.7 percent (266) in fiscal year 1977 to 31.3 percent (251) in fiscal year 1978. Female representation in jobs at GS-13 and above increased slightly, from 5.6 percent to 5.7 percent.

Comprehensive equal employment opportunity awareness training for managers and supervisors at all levels of the organization remained a major priority. A training seminar was held early in the year for top management and additional seminars were conducted later in the year for managers and supervisors of the Alaska Railroad.

Special seminars for women were conducted on two consecutive days near the end of the year. The seminars, developed and presented by a female-owned consultant firm, dealt with problems women face in the workforce.

The Alaska Railroad

The Alaska Railroad moved 2,177,684 revenue tons a total of 329,706,000 ton-miles and earned $29,091, 256 during fiscal year 1978. This reflected a continued downturn of the Alaskan economy, following the oil pipeline construction years. In fiscal year 1977, the Railroad had moved 2.3 million tons of freight a total of 404 million ton miles and had earned $35 million.

The Alaska Railroad operates 478 miles of single mainline track, extending from the deepwater ports of Seward and Whittier through Anchorage to Fairbanks, with a branch line to Eielson Air Force Base, Fairbanks International Airport, Palmer, and the Suntrana coal fields. Interline freight traffic moves by rail-barge from Prince Rupert, British Columbia, and Seattle, Washington, to Whittier and connects there with the Alaska Railroad. Bulk or loose cargo is handled through Seward. During fiscal year 1978, 6,012 carloads moved through Whittier, a one percent decline from fiscal year 1977. Only 540 carloads moved through Seward, in contrast to over 10,000 during fiscal year 1976, the peak oil pipeline construction year.

Passenger service is operated from Whittier to Portage and Anchorage to Fairbanks (a total of 419 road miles). The Whittier-Portage-Anchorage run is operated daily during the summer and three times a week in winter months. Consisting of passenger coaches and flatcars for auto, truck, bus, and motorhome haulage, it principally serves the state operated auto ferry which runs between Whittier and Valdez. The passenger service between Anchorage and Fairbanks operates daily from May to September and twice weekly during the winter. The most important intermediate stop is McKinley Station, location of the McKinley Park Hotel and gateway to Mount McKinley National Park. Approximately 75 percent of the tourist passengers make a stop at McKinley Park. The 126,277 passengers carried in fiscal year 1978 represented an increase of 7 percent over fiscal year 1977. Revenue passengers between Whittier and Anchorage increased 17 percent; however, there was a decline of 2 percent in passengers between Anchorage and Fairbanks.

Except for occasional Congressional appropriations for capital purposes, the Alaska Railroad operates within its revenues. Prior to fiscal year 1975, it experienced a number of successive years when operating results produced negative cash flows. Positive cash flows in fiscal years 1975-1977, as a result of the trans-Alaska oil pipeline activity, plus Congressional appropriations of $24 million, enabled the railroad to support a capital and major maintenance program of over $37 million. During fiscal year 1978, an additional $3.6 million ($3.0 million from Congress) was expended, mainly on track and roadbed improvement.

Revenues for fiscal year 1978 were $29.1 million (a decrease of 17 percent) and expenses were $33.6 million (a decrease of 7 percent). After depreciation, this amounted to a negative cash flow of $1.3 million. To counter the 45 percent drop in revenues between fiscal years 1976 and 1978, strict management and budget controls were instituted. As a result, expenses were curtailed by one-third (from $49.6 million in fiscal year 1976 to $33.6 million in fiscal year 1978).

National Highway Traffic Safety Administration

The National Highway Traffic Safety Administration is responsible for the establishment of performance standards to improve the safety of motor vehicles and equipment and for developing, demonstrating, and implementing programs aimed at improving the safety of all highway users, as well as pedestrians. NHTSA is responsible also for several programs aimed at reducing the cost of owning and operating motor vehicles. In addition, it is responsible for establishing fuel economy standards for passenger cars, light trucks, and vans.

Notable accomplishments during the year included increasing the average fuel economy of the new passenger car fleet to 19 miles per gallon, arranging the recall of about 1.5 million autos with serious fuel tank hazards, and arranging the recall of 14.5 million defective tires.

Problems and Issues. The motor vehicle continued to be the basic form of transportation in the United States and continued to play a significant role in the economic and social development of the country. But there were unwanted costs associated with motor vehicle travel, including air pollution and high fuel consumption, in addition to the injuries, fatalities, and property damage resulting from accidents. During fiscal year 1978, there were more than 49,000 fatalities and more than 4 million injuries associated with motor vehicle travel. Traffic accidents were the sixth leading cause of death in the nation, the leading cause of death among persons 35 and under, the number one cause of paraplegia, and a major cause of epilepsy.

One effort to reduce the number of deaths and injuries related to motor vehicles has concentrated on testing the safety performance of motor vehicles and, if necessary, requiring vehicle recalls and modifications. During the period from 1966-77, an average of about 5 million vehicles were recalled each year for safety defects. In 1977 alone, nearly 13 million were recalled.

In 1974, new passenger cars averaged about 14 miles per gallon of fuel. In 1978, new passenger cars were averaging more than 19 miles per gallon, reversing a downward trend that had persisted since the 1930's. Despite this progress, additional improvement was needed, and NHTSA was made responsible for setting fuel economy standards for passenger cars and light trucks and vans at the maximum feasible levels.

During fiscal year 1978, NHTSA conducted an evaluation of current safety problems and identified a number of problems which required immediate attention.

- Over 8,100 fatalities per year were associated with crashes into the sides of passenger cars.
- Light trucks, vans, and multi-purpose vehicles, accounting for about 27 percent of new vehicle sales, were accounting for more than 5,500 fatalities annually. (Many of the safety requirements covering passenger cars were not applicable to these vehicles.)
- The pedestrian problem remained persistent, with nearly 8,000 being killed annually and many more being seriously injured.
- Motorcycle deaths had increased from less than 2,000 fatalities in calendar year 1968 to more than 4,500 in calendar year 1978.
- Drinking drivers continued to be associated with 50 percent of all motor vehicle fatalities.
- Violations of the 55 mph national speed limit were apparently increasing.

Motor Vehicle Safety

Side Impact protection. A NHTSA standard for side impact protection had taken effect in 1973. However, an agency review of 1977 accident data showed that nearly one third of the passenger car occupant fatalities and one third of the serious passenger car occupant injuries occurred in vehicles which were struck in the side. As a result, upgrading the existing standard became a high priority matter. The problems associated with developing a revised standard included developing an effective side impact test dummy and an appropriate crash test, as well as analyzing possible methods of improving vehicle design.

Light Trucks and Vans. The number of light trucks and vans on the highways was increasing rapidly, as was the number of occupants of such vehicles who were being killed and injured. Therefore, NHTSA was preparing a proposal to amend several existing motor vehicle safety standards to extend their applicability to light trucks, buses, vans, and other multi-purpose passenger vehicles.

Motor Vehicle Braking Systems. NHTSA's braking system standards were reviewed during fiscal year 1978. Special emphasis was given to the standard applicable to heavy vehicles with air brakes, Federal Motor Vehicle Safety Standard No. 121. This standard specified performance requirements for service, emergency, and parking brake systems for heavy trucks, buses, and trailers. The review included analyses of accidents, system maintenance requirements, and manufacturers' warranties. The review was also to include visits to trucking fleets, on-the-road vehicle inspections, and proving ground vehicle tests. A major reason for the review was that the Ninth Circuit Court of Appeals had ruled, in April 1978, that the 60 mph stopping distance and "no lockup" portions of Standard No. 121 were invalid and that other aspects of the standard were impracticable because manufacturers could not test their compliance in the manner specified.

Compliance Testing. For the fiscal year ending September 30, 1978, NHTSA tested 215 vehicles to determine if their performance met federal motor vehicle safety standards. In addition, over 2,500 tires and 3,374 other pieces of equipment, including seat belts, lights, and motorcycle helmets, were also subjected to performance tests.

A total of 258 manufacturer compliance investigations were completed. As a result of these investigations, 37 civil penalties totaling $145,550 were imposed on 25 different manufactures.

During the year, 67 vehicles were tested to determine if they met federal requirements for fuel system integrity. Five vehicles failed to meet the requirements.

Odometer Tampering. Tampering with a vehicle's odometer with intent to change the number of miles indicated violates federal law as well as many state laws. In fiscal year 1978, NHTSA issued a new standard designed to improve compliance with the odometer law. The new standard required that vehicles be equipped with speed and distance indicators, established accuracy requirements for odometers, and limited the indicator speed to 86 mph. It included requirements that the odometers be made more tamper resistant and that they show when 100,000 miles has been passed. Most provisions of the new standard were to become effective in September 1979. The remainder were to become effective in September 1980.

Defect Investigations. A determination was made by NHTSA that a safety related defect existed in Firestone 500 steel belted radial tires and similar tires manufactured by the Firestone Tire and Rubber Company under other brand names. NHTSA's investigation included the analysis of more than 11,000 reports from consumers alleging more than 29,000 individual tire failures and 41 deaths, more than 90 injuries, and more than 3,200 accidents resulting from tire failures. Several million of the tires were still in use on the highways, according to estimates provided by the manufacturer.*

A comprehensive NHTSA study of the effects of rear-end collisions on Pinto fuel tanks resulted in a Ford Motor Company recall of about 1.5 million 1971-76 Ford Pintos and 1975-76 Mercury Bobcats. Tests which were conducted as part of the study demonstrated that low to moderate speed rear-end collisions tended to produce massive fuel leaks. The test program involved 12 rear-end collisions and resulted in two fires from fuel spillage.

Vehicle Research. The purpose of the vehicle research program is to design, develop, and demonstrate vehicles which will help achieve the national goals of safety, fuel economy, and environmental protection. The vehicles must be capable of mass-production at a reasonable price and must operate at moderate cost. The information obtained from designing and testing these research vehicles supports NHTSA's rulemaking activities in connection with occupant crash protection, pedestrian protection, crash avoidance, and fuel economy.

During fiscal year 1978, work continued on the designs of two research vehicles — the Calspan and Minicars research safety vehicles (RSV's). The major design goals for the two vehicles were as follows:

GOALS	*CALSPAN RSV*	*MINICARS RSV*
Occupant Crash Protection	40 - 45 mph	50 mph
Fuel Economy	28 mpg	34 mpg
Emissions (grams/mile of HC, CO, and NO_x)	.41/3.4/1.5	.28/2.4/1.2*
Emissions with alternate powertrains	.41/3.4/.4	

*Without cleanup catalysts

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*On October 20, 1978, the manufacturer agreed to recall about 14.5 million of the tires.

Final design of the Calspan RSV was completed, and the fabrication of vehicles for test and evaluation began. Design of the Minicars RSV continued, with progress being made in improving occupant crash protection as well as enhancing fuel economy. Both RSV's were to be tested and evaluated for performance relative to the design goals. Discussions were begun with West Germany, Italy, England, France, the Netherlands, and Japan in an effort to involve them in developing and testing RSV's.

During the year, the Department accepted the design prototype of another research vehicle, the large research safety vehicle (LRSV). The LRSV was designed to demonstrate that enhanced safety, excellent fuel economy, and low emissions could be achieved in a confortable six-passenger car. The design goals were 27.5 mpg on the combined EPA cycle and emissions of .41 grams per mile of HC, 3.4 grams per mile of CO, and .4 grams per mile of NO_X.

Motor Vehicle Inspection Programs. NHTSA estimated that improper or unnecessary auto repair and maintenance was costing consumers about $20 billion annually. This figure included losses from accidents and premature scrappage resulting from inadequately maintained or repaired automobiles as well as wasted expense resulting from unneeded maintenance and repairs (not all of which was attributable to the repair industry). About half the total estimated loss was due to fraudulent, incompetent, or unnecessary work. Most of the balance was the result of automotive designs which gave priority to ease of manufacture over ease of repair and diagnosis or to owners who misunderstood or ignored maintenance needs.

NHTSA concluded that the problems were too varied and the causes too dispersed to be dealt with effectively through regulatory action. It concluded that the most effective remedy would be to provide consumers with the information they needed to solve their own problems.

In NHTSA sponsored demonstrations, diagnostic inspection programs were found to be feasible and were successful in improving the condition of vehicles while simultaneously reducing the cost of repairs. An analysis of the results of the inspection programs indicated that:

- The safety of the vehicles substantially improved;
- The emission of hydrocarbons and carbon monoxide was reduced by 22 and 12 percent respectively;
- The fuel economy of the vehicles improved 4.7 percent; and
- The cost of tune-ups was reduced by an average of 5.7 percent and unnecessary repairs were reduced by 50 percent.

In fiscal year 1978, 27 states, the District of Columbia, and Puerto Rico had periodic safety inspection programs; and most states were reviewing motor vehicle inspection requirements as part of their plans for meeting the air quality standards mandated by the Clean Air Act Amendments of 1977. As a result, NHTSA initiated a program to offer technical assistance to state and local agencies to help them improve the motor vehicle inspection, maintenance, and repair processes and to make motor vehicle inspections more beneficial and more acceptable to vehicle owners.

Human Factors

The 55 MPH Speed Limit. The 55-mph speed limit was originally imposed as a fuel economy measure, but the lifesaving effects immediately became apparent. During the first year of the speed limit, the highway death toll declined by 9,000. However, enforcement of the speed limit varied from state to state, and there was a gradual erosion in the observance of the speed limit, with a corresponding increase in traffic fatalities. As a result, the Department proposed legislation which would establish criteria for measuring state compliance with the speed limit. The compliance standards were to become progressively more stringent over a five-year period, and funds were to be authorized to assist the states with the enforcement efforts needed in order to achieve compliance. States whose drivers failed to meet the standards in any given year would face the loss of a portion of their share of federal highway construction funds.*

In an effort specifically directed at truckers, the Department conducted a test referred to as the "Double-Nickel Challenge" at NHTSA's test track in East Liberty, Ohio, in August 1978. During the test, 32 independent truck drivers (who doubted the energy-saving benefits of the 55 mph speed limit) drove their trucks around the test track at 55 mph and then at any higher speed of their choice. The test demonstrated conclusively that driving at 55 mph saved significant amounts of fuel compared to driving at higher speeds.

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*The proposed legislation was signed into law on November 6, 1978.

Motorcycle Safety. During 1978, motorcycle fatalities increased by 10 percent (to a record high of 4,530). An important factor in the increase in deaths appeared to be the reduction in helmet use resulting from repeal or weakening of state laws requiring the use of safety helmets. (Studies indicated that the use of helmets usually declined by 40 to 50 percent after repeal.)

Between May 1976 and the end of fiscal year 1978, 26 states either fully repealed or substantially weakened their helmet laws. Fourteen of the state laws were repealed or weakened in fiscal year 1977 and another four in fiscal year 1978.

On the positive side, motorcycle driver licensing tests developed by the Department were proving to be extremely effective. A field assessment of the tests showed a 22 percent reduction in the reported accident rate for persons taking the new tests, in comparison to persons taking the standard state tests. By the end of fiscal year 1978, more than 40,000 motorcycle license applicants in California alone had taken the tests.

Alcohol Abuse. A large number of measures were being brought to bear on one of the most serious traffic safety problems — the drunken driver. Analyses of police reports indicated that at least 45 percent and possibly 75 percent of the drivers involved in fatal accidents were intoxicated, according to chemical tests. Drunken driving is a particularly difficult problem. Because both alcohol consumption and driving are common aspects of American life, no single remedial program could be expected to have a material effect. The actions NHTSA was bringing to bear on the problem included: developing more crashworthy automobiles; assisting in the enforcement of drunken driving laws; improving the efficiency of traffic courts; helping to identify the problem drinkers among those arrested for drunken driving; experimenting with the use of licensing restrictions; and helping state and community educational programs.

Traffic Safety Services

Emergency Medical Services. With the growth of emergency medical services, problems arose which required national solutions. The problems included unsatisfactory communication between the ambulances, dispatchers, and medical advisors and citizen difficulties in gaining access to emergency telephone lines. Efforts were underway to develop better communications equipment.

By the end of fiscal year 1978, of the estimated 290,000 ambulance personnel in the U.S., 80 percent had completed NHTSA-developed emergency medical courses and had been certified by their states as emergency medical technicians. Twenty percent of all ambulance services were expected to acquire life-support equipment during the next 5 years.

The NHTSA-sponsored military assistance to traffic and safety program utilizes military helicopters and military paramedical personnel to respond to civilian medical emergencies, particularly highway accidents. By fiscal year 1978, 23 Army and Air Force bases were participating in the program. During the year, a pilot program was conducted to determine if reserve military units could successfully participate in the program. As a result of this pilot program, planning was underway to add as many as 11 military reserve units and 22 National Guard units to the program.

Motor Vehicle Registration. All states had motor vehicle registration programs; and, with the exception of Kentucky, every state had a titling program. The traditional purpose of these programs had been to provide a central vehicle identification system to support administrative and law enforcement needs. Because of new or increasing needs affecting highway safety (stolen vehicle identification, defect recall campaigns, and detection of odometer rollback fraud), new demands were being placed on the registration and titling programs. NHTSA has helped the states to meet these demands, by improving their data processing capabilities and their operating practices.

During fiscal year 1978, NHTSA developed and distributed model forms and procedures for instituting a title-based odometer disclosure program, a glossary of uniform titling and registration terms, and a manual describing vehicle theft countermeasures which could be incorporated into the registration and titling process. NHTSA also completed its rulemaking for the standardization of vehicle identification numbers.

Driver Licensing. In 1976, the Justice Department estimated that $15 billion was being lost annually through crimes involving false identification. The prime documents used for such criminal activities were birth certificates and driver licenses. It appeared that several million licenses issued in false names might be in use. Such falsifications tended to reduce the effectiveness of the license process and to thwart the effectiveness of driver improvement programs.

In 1978, a NHTSA training program for detecting false identification was developed for use by state licensing examiners. Training manuals and other aids were distributed. By the end of the fiscal year, this material had been incorporated in the driver examiner training programs by about one-half the states.

NHTSA also became a sponsor of the nonresident violator compact. This compact was originally established between Maryland and contiguous states. Under the compact, if a traffic citation is issued by one jurisdiction to a nonresident motorist from another jurisdiction, the nonresident motorist is to be released on personal recognizance. However, failure to comply with the citation will result in the motorist's license being suspended by his home jurisdiction. By the end of fiscal year 1978, twelve states were members of the compact.

Special Programs

Fuel Economy. The Department is responsible for enforcement of a required miles-per-gallon average for cars and light duty trucks produced by each manufacturer each model year. For model year 1978 vehicles, passenger automobile manufacturers had to meet a minimum average fuel economy of 18 mpg, unless exempted on the basis of low-volume production. Preliminary indications were that all 20 major manufacturers would exceed the standard by at least 0.4 mpg and that four low volume manufacturers would also meet the standards set for them.

In March 1978, NHTSA issued average fuel economy standards for light trucks for model years 1980 and 1981. The standards for model year 1981 represented about a 25 percent improvement in fuel economy compared to the existing light truck fleet. The new standards were expected to result in fuel savings of about 3 billion gallons per year by 1985.

Several manufacturers with annual worldwide production of less than 10,000 passenger autos applied for exemptions from the average fuel economy standards. NHTSA granted the requests in most cases, but established alternative standards, based on each manufacturer's ability to increase average fuel economy.

Management of the Department's joint industry-government voluntary truck and bus fuel economy improvement program was added to NHTSA's responsibilities. The voluntary program, supported by the Department of Energy and the Environmental Protection Agency, had over 210 members, representing all facets of the bus and trucking industries. Between 1973 and the end of fiscal year 1978, the program was credited with saving 1.7 billion gallons of fuel. The program emphasized voluntary purchase of fuel saving equipment and devices for trucks and buses.

Traffice Safety Statistics. A sound statistical base is needed in order to evaluate existing and proposed highway safety and motor vehicle safety standards, to pinpoint trends and problems, and to establish better safety systems, standards, and remedial programs. NHTSA develops and operates national accident data collection programs to determine the major causes of accidents and resulting deaths and injuries.

Seven teams of specially trained accident investigators were used during fiscal years 1976 and 1977 to collect data on crash injury severity. NHTSA also reached an information sharing agreement with the Consumer Products Safety Commission, which operates the national electronic injury surveillance system. This system gathers injury data from 130 hospital emergency rooms. Under the terms of the agreement, NHTSA was to receive that portion of the data which pertained to crash victims.

Litigation and Enforcement

Several important court decisions involving traffic safety were handed down during the year. In addition, out of court agreements were reached in 3 contested cases.

U.S. v. General Motors Corporation (Pitman Arm) — On January 16, 1978, the Supreme Court denied General Motors Corporation's petition for a writ of certiorari to the U.S. Court of Appeals for the District of Columbia. The Court of Appeals' decision had held that a showing that a critical vehicle component contains a defect which can cause its failure is *per se* safety related.

PACCAR, Inc. v. Adams — On October 2, 1978, the Supreme Court denied the government's petition for a writ of certiorari to the U.S. Ninth Circuit Court of Appeals. On April 18, 1978, the Court of Appeals had ruled that the 60 mph stopping distance and "no lockup" requirements of Federal Motor Vehicle Safety Standard 121, Air Brake Systems, were invalid. The Court also held that "the regulation" was not objective or practicable because it would not be feasible for certain manufacturers to test compliance in the manner specified in the standard.

U.S. v. General Motors Corporation (Carburetors) — On October 14, 1977, the U.S. Court of Appeals for the District of Columbia upheld the District Court's granting of summary judgment in favor of the Government. The District Court had sustained NHTSA's determination that Rochester Quadrajet carburetors installed in 1965 and 1966 Chevrolets and Buicks contained a safety-related defect. The

Court of Appeals remanded to the District Court the determination of a civil penalty. The District Court ordered General Motors to pay the maximum applicable civil penalty of $400,000.

U.S. v. Ford Motor Company (Brackets) — The U.S. Court of Appeals for the District of Columbia rejected as moot Ford's appeal of the District Court's order that Ford notify owners of and remedy defective seat brackets in 1968 and 1969 Mustangs and Cougars. The Court of Appeals also rejected the Government's appeal of the adequacy of the notification letter sent by Ford.

B.F. Goodrich v. DOT — On September 13, 1978, the U.S. Court of Appeals for the Sixth Circuit denied the tire industry's motion for a stay pending judicial review of the uniform tire quality grading standards.

U.S. v. Ford Motor Company (Wipers) — On July 6, 1978, the U.S. District Court for the District of Columbia ruled that, as asserted by NHTSA, certain Capri windshield wipers contained a safety-related defect. Ford did not appeal.

Koehring Company v. Adams — On June 14, 1978, the United States District Court for the Eastern District of Wisconsin granted the plaintiff's motion for summary judgment, ruling that "mobile construction equipment" which is designated to perform work on construction sites and which normally uses the public roads only for travel between job sites is not a "motor vehicle" as defined in the National Traffic and Motor Vehicle Safety Act of 1966 and therefore not regulated by NHTSA.

U.S. v. Firestone — On August 15, 1978, the U.S. District Court for the District of Columbia granted the Government's petition to compel Firestone to respond to a NHTSA special order concerning safety defects in Firestone steel belted radial tires. The Court's ruling upheld the agency's broad interpretation of its investigatory powers.

1977 Ford Granada — On September 5, 1978, Ford Motor Company paid a compromise civil penalty of $125,000 for failure of the 1977 Ford Granada to comply with Federal Motor Vehicle Safety Standard 301-75, Fuel System Integrity.

1971-76 Ford Pinto and 1975-76 Mercury Bobcat — On May 8, 1978, NHTSA made an initial determination that a safety related defect existed in the fuel tanks and filler necks installed in 1971-76 Ford Pinto and 1975-76 Mercury Bobcat automobiles. Shortly before the scheduled public hearing, Ford Motor Company agreed to recall and remedy these vehicles.

Firestone 500 Steel Belted Radial — On July 7, 1978, NHTSA made an initial determination that a safety related defect existed in the Firestone 500 steel belted radial tire. A public hearing was held on August 7-8, 1978, and shortly thereafter Firestone entered into negotiations with NHTSA which resulted in an agreement to recall approximately 14.5 million of the tires.

Administration

Organizational Changes. A reorganization of NHTSA was approved on December 16, 1977, and became effective on January 1, 1978. The new arrangement merged all rulemaking activities under an Associate Administrator for Rulemaking; and all enforcement activities were consolidated under an Associate Administrator for Enforcement. Responsibility for all field research, development, evaluation, and testing (other than that performed under contract) was assigned to the Vehicle Research and Test Center at East Liberty, Ohio.

Civil Rights. Notable accomplishments in civil rights during the year included:

- Formalizing an upward mobility program which was to be implemented in fiscal year 1979;
- Expanding NHTSA's special employment programs, which gave federal work experience to 84 young people, of whom 34.5 percent were minority and 61.9 percent female; and
- Increasing female representation in NHTSA's professional ranks from 11.7 percent to 13.5 percent, an increase of 1.8 percent.

At the end of fiscal year 1978, NHTSA's employees totaled 842, of whom 22.2 percent (187) were minority and 34.3 percent (289) female. At the end of fiscal year 1977, the total employment was 850, of whom 22 percent (187) were minority and 33.6 percent (286) female.

Urban Mass Transportation Administration

The Urban Mass Transportation Administration is responsible for carrying out the Department's mandate to improve urban mass transportation. It is the principal source of federal financial assistance to help both urban and non-urban areas plan, develop, and improve comprehensive mass transportation systems.

The more significant activities of the Urban Mass Transportation Administration (UMTA) during fiscal year 1978 included decentralizing the grant approval process, issuing a rail transit policy, and preparing major new legislative proposals.

Policy

On March 7, 1978, UMTA issued its rail transit policy, which outlined the process through which proposed urban rail transit investments would be evaluated and grants made. The policy statement stressed the continuation of UMTA's support for rail transit projects, and established specific criteria for the approval of new rail projects.

Policy Research

UMTA's policy, program development, and evaluation activities included research projects covering such topics as energy, paratransit, the institutional aspects of transportation system management, the arts in mass transit, parking management policies, neighborhood revitalization, collection of travel data, and projecting the cost of transit accessibility for handicapped and elderly transit users. All of the research was carried out through contracts and grants, including $2 million which was awarded to 27 universities under the university research and training program.

Legislation

In January 1978, legislation was proposed that would combine, for the first time, federal financial assistance programs for highways and public transportation. At the end of the fiscal year, the legislation, referred to as the Surface Transportation Act of 1978, was nearing passage by Congress. At the same time, a Departmental proposal was being developed that would call for establishment of a Surface Transportation Administration by consolidating UMTA and the Federal Highway Administration.

Regulations

On March 21, 1978, UMTA issued a proposed revision to its Transbus procurement requirements. The revision changed the specification to require two axles rather than three. This change made possible a lower gross weight, permitted the use of a slightly larger tire size and a beam-type front axle, and was expected to reduce manufacturing and maintenance costs.

On September 19, 1978, UMTA issued another revision to the Transbus procurement requirements. This revision permitted use of either a ramp or a lift at the front door. Previously, a ramp had been required.

On June 8, 1978, proposed regulations were issued which would provide for the accessibility of public transportation systems to handicapped persons. The regulations were required under the provisions of Section 504 of the Rehabilitation Act of 1973. On July 14, 1978, the period for comments on the proposed regulations was extended into fiscal year 1979.

Grant Procedures

During the year, Atlanta, Boston, Chicago, New York, and San Francisco joined Philadelphia as fully staffed regional offices. Full delegations of authority for most planning, capital, and operating grant programs were given to the regional offices.

Both the headquarters and regional sections of UMTA's *Organization, Mission, and Functions Manual* were completed. This manual formally documented UMTA organizational structure below the office level. In addition, to provide policy guidance to both UMTA staff and grantees, work was begun on a complete updating of UMTA's *Internal Procedures Handbook* and their *External Operating Manual.*

Capital Assistance Grants

During fiscal year 1978, a total of $2.0 billion in capital assistance grants was approved by UMTA. Initial funding was given to 265 new projects and 134 ongoing projects received additional funding. As of September 30, 1978, the cumulative total for all capital grant funding since the beginning of the UMTA program (early in 1965) amounted to $10.3 billion for 1,341 separate projects.

Discretionary Grants. Discretionary capital grants made up the largest percentage of UMTA funding during the year. A total of $1.4 billion was approved for 184 new and 112 ongoing projects. (Included in the total was $16.3 million for 56 projects involving the purchase of equipment and facilities for use by private nonprofit organizations to provide transportation for the elderly and handicapped.) As of September 30, 1978, the cumulative total of discretionary grants since 1965 amounted to $8.4 billion for 1,085 separate projects.

Interstate highway substitution projects reached a new peak of activity during the year as $556.4 million was made available for transit improvements. The Washington area received $272.7 million, the Boston area $193.7 million, and the Philadelphia area $90 million. By the end of the year, a cumulative total of $1.7 billion in transit funds had been derived from interstate transfers. Urban systems highway funds furnished an additional $30.4 million in capital grant approvals during the year, bringing the cumulative total in that category to $146.1 million.

Formula Grants. A total of 73 new formula capital projects and 18 amendments to ongoing projects were approved during the year. Total funding for the year in this category was $50 million; and the cumulative total reached $130.9 million.

Capital Grants By Mode

Out of approximately $2 billion approved for capital improvements during the year, about $1.4 billion went to rail transit systems, including commuter, rapid, and light rail. This continued a trend that had characterized UMTA's funding programs since the earliest days. Bus transit received about $580 million, with the remainder going largely for preliminary engineering and design for four downtown people mover systems.

Rail Transit Grants. Several large rail transit commitments made during the year were of special interest.

- Atlanta, which was expected to begin rapid transit operations in 1979, received $108.1 million. This completed UMTA's commitment of $800 million for the construction of 13.7 miles of this new rapid transit system and the acquisition of 100 cars. (The Atlanta system was the first in the nation in which UMTA had been directly involved from the beginning.)
- An additional $87.2 million was provided to Baltimore for continued construction of that city's rapid transit system, bringing the total to $435.9 million. (UMTA's full commitment to the system was $572.7 million.)
- Boston continued to receive interstate substitution funds for its growing rail transit system. In fiscal year 1978, $128.7 million in substitution funds was made available for the Red Line extension northwesterly from Harvard Square to the outer limits of Cambridge. The extension would serve a thickly populated and very transit oriented segment of the Boston area.

- On the other side of Boston, $44.7 million was approved for the beginning of work on the Orange Line southwest corridor project. This project involved relocation of the line from an antiquated elevated structure to the existing Amtrak right-of-way.
- In addition to funds for the Boston rapid transit system improvements, the Massachusetts Bay Transportation Authority also received a grant of $20.3 million for improvements (including new diesel locomotives) to the commuter rail service operated by the Boston and Maine Railroad.
- Buffalo's Niagara Frontier Transportation Authority received a grant of $50 million to begin construction of its 6.4 mile Main Street light rail facility. UMTA had made a commitment of $359 million to this project.
- In Chicago, $30.6 million was authorized to begin construction of the O'Hare Airport extension to the Chicago Transit Authority's rapid transit system.
- Miami received $45 million to augment the $15 million received previously. The funds were to be used largely to acquire Florida East Coast Railroad right-of-way. During the year, UMTA increased its funding commitment to Miami's planned 20.5 mile rapid transit system from $575 million to $632 million.
- The New York City subway system received several UMTA capital grants during the year. The 63rd Street tunnel project received $43.6 million, the Archer Avenue subway received $29.6 million, and a total of $82.1 million went to the systemwide modernization and improvement program. (Some of the latter funds went into projects which also improved the bus system.) In addition, $22.8

million was added to the previous funding of $134.1 million for the Long Island commuter rail segment of the 63rd Street tunnel project. Altogether, a total of $260.4 million in capital funding was approved.

- On the New Jersey side of the Hudson, $50 million was approved to continue commuter rail improvement projects involving the former Erie-Lackawanna electrified service and the former New York and Long Branch line.
- The center city commuter connection project in Philadelphia received an additional $85 million, bringing the total funding to $110 million. UMTA's commitment to this project was $240 million.
- For the first time, UMTA provided interstate substitution funds to the Southeastern Pennsylvania Transportation Authority, which serves Philadelphia. The funds were to be used for the acquisition of new transit cars. A total of $52.1 million was earmarked for the purchase of new light-rail vehicles for the downtown streetcar subway and for suburban light-rail services, while $37.9 million was earmarked for new transit cars for the city's major north-south trunk line, the Broad Street subway.
- A total of $272.7 million in new interstate substitution funding was approved for the Washington Metrorail system, bringing the total to $1 billion. At the end of the year, 60 miles of the planned 100 mile system were fully funded, and 23 miles were in operation.

Downtown People Movers. During the year, nearly $4 million was approved for engineering and design of downtown people movers for Detroit, Houston, Los Angeles, and Miami. The systems were to be fully-automated elevated transit systems linking major activity centers within downtown areas. UMTA had pledged $220 million in federal funding for people mover systems; and by the end of the fiscal year, people mover system grants totaled $2.89 million.

Bus Transit Grants. The bus transit grants which were approved during the year included funds for the acquisition of more than 4,000 new buses, including many advanced design units. Some of the grants for bus transit were of special interest.

- The Pittsburgh east busway, to which UMTA had committed $85.6 million, received a grant of $31.9 million. This 7-mile busway, which was being built along the Conrail right-of-way through the heavily populated east end of Pittsburgh, was expected to result in a dramatic improvement in bus service to areas east of the city.
- The Los Angeles area received nearly $50 million for new buses, garages, and support equipment. Especially notable was the approval of funds for 20 double deck buses for the Southern California Rapid Transit District. Use of the double deck buses would increase the bus capacity of heavily traveled routes without adding to the existing congestion.
- Other areas receiving significant grants for new buses included San Francisco, Minneapolis-St. Paul, Detroit, New York, Washington, Houston, and Miami.

Small cities also received many capital grants which, although not individually large, did permit important improvements to the areas involved. The year's smallest capital grant went to Frederick, Maryland, which received $6,000 to use in buying out a small private operator.

Operating Assistance Grants

During fiscal year 1978, a total of $628.3 million in operating assistance grants was provided to transit systems under UMTA's formula grant program. A total of 417 grants were involved. The largest among these were grants to the major metropolitan areas, such as the New York urbanized area, Los Angeles, Chicago, Philadelphia, and San Francisco. Funds granted for operating assistance during fiscal year 1977 had totaled $571.8 million.

Transbus

UMTA's Transbus specifications, issued in August 1978, outlined standardized performance and procurement requirements for transit buses. The Transbus specifications were developed, under an UMTA research and development program, specifically to provide easier access for bus passengers, including the elderly and handicapped. The specifications required that buses purchased with federal funds have a maximum 22-inch floor height, be capable of lowering the floor to no more than 18-inches at the front door, and have low steps and a wide front door. In addition, manufacturers were required to offer a choice of either a front door ramp or a front door lift for elderly and handicapped riders.

Small Buses

During fiscal year 1977, UMTA conducted a study of the present and projected use of small buses in U.S. transit systems. The study found that there was apparently only a market for 500 to 1,000 vehicles per year. UMTA was able to define several desirable operating features for small buses, including heavy duty transit design, low floors, diesel engines, and accommodations for the elderly and handicapped. As a result of the study, UMTA was able to establish a general, performance-oriented, specification for small buses.

High Capacity Buses

During peak traffic hours, additional buses must be put into service to handle the extra load. The cost of providing additional vehicles and drivers can be reduced if the capacity of the buses can be increased. In addition to the use of double deck buses, some European cities have used high-capacity articulated buses. After studying the buses in use in Europe, UMTA prepared a specification for articulated buses for use in U.S. transit systems. By the end of fiscal year 1978, a total of 426 articulated buses had been funded for 14 U.S. transit systems.

Automatic Vehicle Monitoring

Automatic vehicle monitoring refers to the use of an electronic system to obtain continuous information about the location of all the buses in a fleet. The information can then be used to reroute or reschedule the buses. The advantages of vehicle monitoring include the ability to provide better service to passengers, to improve operating efficiency, to obtain data for management use, and to provide greater passenger and driver security.

UMTA experimented with an electronic vehicle monitoring system in Philadelphia from December 1976 to March 1977. In fiscal year 1978, it awarded a contract for and began installation of a full-scale monitoring system in Los Angeles.

Diesel Powered Taxicabs

During the year, the UMTA-sponsored project to compare the performance of diesel powered and conventional taxis was essentially completed. Sixty-six pairs of taxicabs were put into service in New York City, differing only in that one of each pair had a diesel engine and the other a gasoline engine.

Data accumulated during the year indicated that the diesel taxis were providing 50 percent more miles per gallon of fuel than their gasoline powered counterparts. Both vehicles seemed to be equally acceptable to both users and drivers. Based on these results, UMTA concluded that diesel powered taxis presented an acceptable and fuel efficient alternative to gasoline powered taxis.

Paratransit Vehicles

Two prototypes of a new vehicle for taxi-like service, which were developed by UMTA, were exhibited throughout the country. The vehicles, which featured accessibility to wheelchair passengers, were very well received by the public and the taxi industry.

UMTA drew up plans to produce preproduction prototypes of the vehicles to be tested and exhibited in suitable locations in the U.S. Emphasis in the preproduction prototypes was to be placed on low manufacturing, maintenance, and operation costs.

Railcar Standardization

An important factor in the cost of rapid transit railcars has been the widespread practice of ordering customized cars. During the year, UMTA completed the first phase of a railcar standardization project, the feasibility study, and began the second phase, development of a standard rapid transit car specification. In the meantime, it applied the "common specification" concept in ordering railcars for the Miami, Baltimore, Philadelphia, and Cleveland rapid transit systems.

Automated Guideway Systems

At the end of the year, the Morgantown, West Virginia, people mover system had completed 29 months of service and had carried over 4,000,000 passengers. The system was carrying 13,000 to 15,000 passengers daily and had more than 97 percent service availability, which exceeded the original specifications.

Based on the experience gained with the Morgantown system, preliminary designs for three advanced people mover systems were completed, and negotiations started on contracts for two engineering prototypes. The cities selected for downtown people mover demonstrations, (Los Angeles, Saint Paul, Houston, Detroit, and Miami) began preliminary engineering studies, preparation of detailed cost estimates, and preparation of draft environmental impact analyses.

During the year, UMTA completed its assessments of several operating people mover systems, both public and private. The assessments found that people mover systems generally have a low operating cost per mile and per passenger and a high degree of reliability. As a result, UMTA concluded that people mover systems have great promise for areas where high capacity urban transit is needed.

Tunneling Technology

UMTA continued its participation in the Department's tunneling program, which began in fiscal year 1973. The goal of the program is to reduce costs by

30 percent, to educate planners in the proper use of tunnels, and to optimize their use in urban environments. During the year, UMTA completed a number of studies, including one on insurance for urban construction and one on utilization of soil and rock excavated from tunnels. It also conducted tunneling technology workshops on construction methods, precast concrete liners, subway environmental control, and soft ground construction.

Transit Management

Research on transit management during the year placed a strong emphasis on the human resources side of transit. A pilot project to reduce absenteeism was begun, as was an evaluation of the benefits of a bus simulator; and a training session specifically tailored to the needs of members of governing boards was conducted.

A two-week training course in marketing was conducted for new professionals in the field, and work began on a major information-sharing project through which transit systems could benefit from work done elsewhere.

Several bus systems implemented the automated run-cutting and scheduling system known as RUCUS. This system is considered one of the industry's best tools for improving transit productivity. A similar system for rail transit was nearing completion as the year ended; and work was begun on another productivity improvement — the design of a standard format for maintenance manuals for diesel-powered buses.

Transportation Planning

UMTA's technical studies program provided transportation planning assistance to states, metropolitan planning organizations, and transit agencies. During the year, a total of $55 million was made available to approximately 300 grantees to carry out transit-related research and planning studies and to develop integrated transportation improvement programs at the local level. Out of this total, $52 million was awarded for planning, engineering, designing, and evaluating urban mass transportation projects. The remaining $3 million was set aside to fund special studies.

Continued emphasis was given to improving alternatives analyses, environmental impact statements, transportation system management plans, and elderly and handicapped planning and to developing improved system evaluation techniques.

Transportation Planning Methods

A major new version of the urban transportation planning system software package was released, with four new programs and numerous enhancements. The new capabilities included automated methods to select geographic subregions for further analysis; for example, the central business district or a transportation corridor. Other enhancements included major improvements in the ability to organize and present data related to demand forecasting and to evaluation of cost impacts. Also included was a planning module which permitted simplified projections of the air quality impacts resulting from proposed transportation policies. An estimated 200 agencies, firms, and universities used the programs, which are estimated to have been run about 300,000 times during the year.

Several major planning method initiatives were undertaken during the year. Especially important were the development of new software and techniques to permit transit planners to better utilize knowledge about the existing highway and street system and to improve manpower scheduling and costing methods.

Preliminary planning methods were completed for cities considering downtown people movers. The methods included demand estimating techniques and a strategy for forecasting the specific impacts of downtown people movers. In addition, a computerized downtown people mover guideway flow simulation model was delivered for testing. The model was designed to assist local staffs in assessing downtown people mover operating strategies.

Service and Methods Demonstrations

UMTA's service and methods demonstration program continued to develop demonstration projects. Steady progress was being made toward larger and more comprehensive projects in the paratransit area. This progress was made possible by utilizing the results of smaller demonstrations which had been funded earlier. In addition, attention was shifting to the demonstration of effective brokerage arrangements for a mix of transportation services, both for the general public and for special user groups like elderly and handicapped riders.

Pricing Policy Innovations. UMTA continued to assist the transit industry's efforts to maximize ridership by generating data on the impacts of reduced fare and fare-free programs, particularly those programs which were aimed at market segments with a high potential for increased ridership.

Two new transit productivity improvement demonstrations were funded during the year, one in

Omaha, Nebraska, and the other in Columbus, Ohio. The demonstrations were designed to test new techniques for evaluating the cost of transportation and service improvements. A demonstration in the Portland, Oregon, to Vancouver, Washington, corridor was designed to investigate the trade-offs between price and service changes and the relative contributions that each could make in improving the productivity of conventional mass transportation systems.

Two fare-free projects were implemented, an off-peak system-wide project in Denver, Colorado, and an off-peak central business district project in Albany, New York. In addition, the first pricing *disincentive* demonstration was funded. Madison, Wisconsin, was to test the effects of increased peak hour parking charges in conjunction with mass transportation improvements.

Paratransit Innovations. In previous years, UMTA had funded a number of paratransit demonstration projects for elderly and handicapped people. During fiscal year 1978, several cities started such services, using the UMTA demonstration reports as a guide. Elderly and handicapped accessible fixed-route buses or special transportation services also became available or were planned in many urban areas. Some of the specific paratransit demonstration accomplishments during the year included:

- Successful testing of the user subsidy concept in several small cities.
- In Danville, Illinois, a transit service demonstration featured the use of traditional fixed route bus service for high demand routes and a demand responsive service for low density areas. The demand responsive service was operated by a taxi company and resulted in a savings of $2,000 per month compared to the cost of the previously used fixed route service.
- Rochester, New York, started a demand responsive service, using a private operator, in two suburban areas.
- A grant to develop a transportation brokerage system was awarded to Chicago.
- The number of ridesharing programs was expanded and the coordination of ridersharing programs and social services also received widespread attention.

Conventional Transit Innovations. Prior success in demonstration priority techniques for high occupancy vehicles on the trunk portion of transit routes allowed the demonstrations program to shift attention to the suburban and downtown portions of transit service. After three years of study and planning of auto restricted zones, fiscal year 1978 saw the beginning of actual demonstrations. Three auto restricted zone projects were funded during the year — Boston, Providence, and Memphis. The Boston demonstration began on September 8, 1978. The Memphis and Providence demonstrations were scheduled to begin in 1979 and 1980, respectively.

A study of transit malls in Minneapolis, Philadelphia, and Portland, Oregon, was completed during the year. The study found that transit malls (downtown bus-only streets) have a major and positive impact in the revitalization of central business districts. The malls were also found to result in definite improvements in both transit reliability and ridership.

Civil Rights

UMTA continued to increase its minority and female employment. As of September 30, 1978, minorities constituted 33 percent of UMTA's total work force, 177 of 508 persons, as compared to 36 percent or 160 of 441 persons as of May 31, 1977. In the professional ranks, 96 of 410 persons, or 23 percent, were minorities, as compared to 87 of 381 persons, or 24 percent, in May 31, 1977. In addition, there were 241 women employees, or 45 percent of the total work force, compared to 226 or 44 percent of the total work force as of May 31, 1977. Finally, women held 120 professional slots, or 29 percent of that category, compared to 77 professional slots or 24 percent on May 31, 1977.

UMTA modified its external civil rights program with the issuance of three civil rights circulars which became effective March 1, 1978. The circulars included all three of UMTA's civil rights programs (nondiscrimination in service delivery, equal employment opportunity, and minority business enterprise) in the pre-award review. The circulars also made written affirmative action plans a precondition to the awarding of most grants. In addition, UMTA's pre-award review of the grantee's compliance with federal nondiscrimination provisions in service delivery was strengthened.

UMTA continued its efforts to enhance minority and female business enterprise opportunities through its general procurement program, as well as through its monitoring of the procurement activities of UMTA grantees. During the year, UMTA awarded or was negotiating the awarding of 46 contracts, worth more than $6 million, to minority enterprises, a 50 percent increase over fiscal year 1977. UMTA grantees also reported increasing the awarding of contracts and subcontracts to minority firms more than two and one-half times, to nearly $70 million.

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation was created in 1954 to construct the U.S. facilities for the Saint Lawrence Seaway project. Since 1959, when the Seaway opened to navigation by ocean-going ships, the Seaway Corporation has been charged with the operation and maintenance of that part of the Seaway between Montreal and Lake Erie which is within the territorial limits of the U.S.

Among the Seaway Corporation's significant achievements during calendar year 1978 were the establishment of a revised tariff, the institution of new winter closing procedures, and constructing and testing a hydraulic model which demonstrated that the Seaway navigation season could be extended without endangering the environment.

Together with a counterpart Canadian agency, the Seaway Corporation operates locks and channels and provides vessels transiting the Seaway from Montreal to Lake Erie with vessel traffic control assistance that includes management of ship movements. It also provides and maintains aids to navigation.

Besides providing a safe, efficient, and effective artery for maritime commerce, the Seaway Corporation is responsible for encouraging the development of traffic throughout the entire Seaway, so as to contribute to the development of the region.

Unlike most government agencies, the Seaway Corporation is self-sustaining. All operation, maintenance, administrative, and capital improvement costs are paid from revenues obtained from tolls charged to vessels which transit the system.

Tonnage moved through the Montreal-Lake Ontario section of the Seaway during calendar year 1978 declined by 1 percent from the 1977 record, to 62.8 million tons. Four cargo categories reached new record levels: bulk cargo, 57.7 million tons; grains, 30.6 million tons; wheat, 15.5 million tons; and corn, 7.1 million tons.

Seaway Corporation revenues during 1978, principally from tolls, increased 15 percent over the previous year, to a record $9.9 million. Of that total, $2.5 million was returned to the U.S. Treasury for payment of the bonded debt required to construct the Seaway. That debt was reduced to $113 million.

A revised Joint Seaway Tariff of Tolls took effect April 3 — the start of the 1978 navigation season. The new tariff included an expanded list of commodity classes, the assessment of tolls on metric rather than short tons, a higher share of revenues for the U.S. on the Montreal-Lake Ontario section, and the first cargo toll increases since the Seaway opened to deep-draft navigation in 1959. Under a three-year phase-in plan, roughly 50 percent of the toll increases occurred in 1978. They were to be followed by 25 percent increases in 1979 and 1980.

Also in 1978, new closing procedures were instituted by the Seaway Corporation to provide a more timely and orderly exit of ships from the waterway in December. A major change was the assessment of an operational surcharge, ranging from $20,000 to $80,000, on vessels that failed to reach specified call-in points on either end of the Seaway by December 15. The new procedures included new restrictions on low-powered vessels during the closing period.

Another major Seaway Corporation activity in 1978 was the construction and testing of a $1 million, 422-foot-long hydraulic model of a 13-mile reach of the St. Lawrence River. Its purpose was to develop designs for modifications to existing ice booms in the river, and to design a new ice control system that would permit an extension of the present 8½-month navigation season.

The model was constructed under the auspices of the congressionally-funded Great Lakes/St. Lawrence Seaway navigation season extension demonstration program. Test results using the model indicated that vessel transit could occur without disrupting water flows for power generation or endangering the environment.

According to the Seaway Act of 1954, the Seaway Corporation is required to submit to the President, for transmission to Congress, a separate annual report based on calendar year results. The most recent report may be obtained at no charge from: The Office of Communications, Saint Lawrence Seaway Development Corporation, P.O. Box 520, Massena, New York 13662.

Research and Special Programs Administration

The Research and Special Programs Administration (RSPA) was established on September 23, 1977, as part of a major Departmental reorganization. (The details of that reorganization are presented in the Appendix to this report.) The primary elements of the new administration were the Materials Transportation Bureau, the Transportation Programs Bureau, and the Transportation Systems Center.

The new administration's responsibilities included: (1) ensuring the safe movement of hazardous materials and the safe operation of gas and liquid pipelines; (2) improving cargo security; (3) facilitating cargo movement; and (4) conducting research in support of a wide range of Departmental programs.

During its first year, RSPA faced a number of challenges. They ranged from preparing to oversee the design and construction of the Alaska Natural Gas Pipeline to coordinating the multi-modal activities of all the administrations within the Department.

Hazardous Materials

Approximately 2.5 billion tons of hazardous materials are transported in the U.S. every year. Each day, more than 250,000 shipments of hazardous materials are transported by more than 45,000 carriers.

During fiscal year 1978, RSPA made significant progress in the following areas related to hazardous materials safety:

- The backlog of hazardous materials exemption applications was reduced by 60 percent.
- New hazardous materials enforcement procedures were initiated, and 29 penalties were assessed for violations of hazardous materials regulations by container manufacturers and shippers.
- A staff for management and review of the construction, testing, and operation of the Alaska natural gas pipeline was established.
- An agreement was reached with the Coast Guard concerning the regulation of liquefied natural gas waterfront facilities. The agreement was expected to prevent overstaffing and to assure coordinated regulation.
- The retrofitting period for railroad tank cars was shortened, as a result of a series of railroad accidents involving tank cars transporting hazardous materials. The period for installation of special couplers was advanced from December 31, 1977 to December 31, 1978; of headshields from December 31, 1981 to December 31, 1979; and of thermal insulation (including jacketing) from December 31, 1981 to December 31, 1980.

A total of 17,566 hazardous materials incidents was reported in fiscal year 1978, compared to 14,819 in fiscal year 1977. Fiscal year 1978 fatalities resulting from hazardous materials incidents totaled 47, and injuries totaled 1,195, compared to 33 fatalities and 667 injuries the year before.

Gas pipeline operators reported 1,996 failures during calendar year 1977, resulting in 36 fatalities and 450 injuries. Calendar year 1976 failures had totaled 1,593, with 63 fatalities and 366 injuries.

Liquid pipeline accidents reported during calendar year 1977 totaled 238, with 3 deaths and 19 injuries, compared to 209 accidents with 5 deaths and 5 injuries during 1976.

Railway Tank Cars

A potentially catastrophic problem for railroads is the puncture and subsequent explosion of a rail tank car containing hazardous materials. During 1978, RSPA and the Federal Railroad Administration continued the development and testing of puncture proof shields and anti-override couplers on the ends of tank cars. The shields would help prevent puncture of the tank if the car were involved in a collision. The coupling device would help prevent the coupler on one car from riding up over the tank car's coupler and puncturing the tank. Both devices were successfully tested at the Department's rail test facility at Pueblo, Colorado. The tests were the basis of the federal requirement to install the shields and special couplers on two models of hazardous material tank cars.

Transportation Security and Safety

Maritime cargo losses were calculated by RSPA for the first time. The figures, which were taken from the Customs Service's theft related loss data (as reported by carriers for calendar years 1972 through 1976) indicated that the annual loss of maritime transported cargo was averaging $22 million. The study also concluded that a significant portion of the annual loss was attributable to theft.

During the year, the industry began to implement a voluntary cargo security program. RSPA was promoting the voluntary program by emphasizing the economic benefits which would result from loss prevention.

Passenger safety also continued to be a major concern. One significant accomplishment in 1978 was the Transportation Systems Center's development of techniques for detecting flaws in passenger car tires without damaging them. The testing technique, which uses ultrasonic waves, was also applied to airplane tires. Ultrasonic testing of tires quickly became a standard procedure for many airlines.

Facilitation

RSPA continued the Department's efforts to simplify the distribution and processing of transport and trade documentation (docking papers, shipping orders, invoices). The effort was being coordinated with the transportation industry through the non-profit Transportation Data Coordinating Committee. During the year, RSPA and the committee identified and tested a set of proposed electronic data interchange standards. These standards formalized the coding and transmission of transport and trade documentation from one carrier or shipper to another. After the standards were evaluated and tested, they were to be made available to transportation users and the transportation industry for voluntary use. Initial results indicated that transport and trade documentation could be moved more quickly, accurately, and inexpensively by using the standardized coding.

During fiscal year 1978, RSPA initiated a program to encourage federal shippers (the Department of Defense, the Department of Agriculture, the Postal Service, etc.) to join forces with private industry in developing a tariff modernization program. Under this program, searching for and retrieving tariff rates would be made easier through the use of electronic computers and electronic communication networks. Although this program did not address the process of rate making itself, it did offer alternatives to current manual systems of filing, searching for, and retrieving shipping rates.

Alaska Natural Gas

The Alaska Natural Gas Transportation Act of 1976 requires a number of federal agencies to expedite the construction of a transportation system to deliver natural gas from Alaska to the lower 48 states. The Department of Transportation coordinated a number of actions on a direct basis and in interagency group efforts to meet its responsibilities under the Act.

In cooperation with other federal agencies, the Department assisted in developing a proposed plan for organization of federal involvement with the successful applicant for the Alaskan natural gas pipeline, provided technical input for the President's decision and report to Congress on the pipeline; and drafted proposed terms and conditions for the pipeline, as well as proposed guidelines for the activities for federal inspectors under the Act.

In addition, the President's decision included an "agreement between the United States of America and Canada on principles applicable to a northern natural gas pipeline." Principle 10 in the agreement provides that the two governments will establish a technical study group for the purpose of testing and evaluating the safety, reliability, and economic efficiency of the pipeline.

Materials Transportation Bureau personnel met with other federal agency officials and their Canadian counterparts to carry out their joint responsibilities under this agreement.

A technical report which was prepared by the Materials Transportation Bureau contained the U.S. government's safety and reliability evaluation of various design alternatives for the 1,083-mile Canadian segment of the gas pipeline. This report was submitted to the Canadian government in February 1978, together with the Department of Energy's economic evaluation of that segment of the pipeline.

University Research

During fiscal year 1978, RSPA's university research program awarded 29 new contracts and 19 contract renewals to institutions of higher learning in 25 states. The contracts ranged from studies of economic regulation to studies of the safety and technology requirements for advanced transportation systems.

Some of the more successful projects carried out under university research contracts included:

- Research at Stanford University on design methods for soft ground grouted tunnels. By the end of the year, the research had saved over $1 million in the building of Washington's subway system.

- Research at North Carolina Agricultural and Technical State University which resulted in the development of a low cost rural transit system model and significantly improved rural transportation planning.
- Research at the University of Wisconsin on flywheel energy systems, which were expected to have long-term impact on improving motor vehicle fuel economy.

Four contracts were awarded to minority universities and colleges. These contracts reflected the program's efforts to involve minority schools in transportation research and to encourage minority students to plan careers in transportation.

Technology Sharing

The Transportation Systems Center's technology sharing program continued to be the Department's focal point for the exchange of information, ideas, and experience on a wide range of transportation topics. Approximately 5,000 requests for information were handled in 1978. In addition, the Center received almost 20,000 requests for its publications.

Transportation Information System

During the year, RSPA performed a comprehensive study of the Department's existing transportation information system. A plan was developed to establish a center within RSPA for the management of transportation information. The center was expected to improve the sharing of information within the Department and with the transportation industry, the public, and other federal agencies.

Appendix

Consolidated Rail Corporation

During fiscal year 1978, the Federal Railroad Administration was engaged in a joint analysis with the United States Railway Association to develop alternatives and recommendations for solving the Consolidated Rail Corporation (Conrail) problems. The analysis was scheduled for completion by May 1979 and was expected to result in legislative recommendations concerning Conrail. The analysis was to take into consideration earlier analytical efforts, which had shown that there was no quick and easy solution to the decade-old Northeast rail freight problem but that it was still possible to achieve financially self-sustaining Northeast rail freight operations if the various constituencies involved cooperated in a comprehensive solution.

The analysis was expected to result in several detailed alternatives for Conrail and in the identification of specific options and recommendations in each of the following categories: (1) system size and configuration; (2) facilities and equipment; (3) operating methods, including such items as labor, productivity, and car utilization; (4) regulatory reform; (5) railroad organizational structure; (6) financial performance; and (7) system ownership. The analysis was also taking into consideration external impacts, such as the economies of the Northeast and the nation.

While the legislative recommendations which were expected to result from the analysis would be submitted to Congress after the expected submission of the Department's railroad regulatory reform proposals, the Conrail recommendations were expected to be fully consistent with those proposals.

National Railroad Passenger Corporation

The National Railroad Passenger Corporation (Amtrak) was established by the Rail Passenger Service Act of 1970. The Act was the result of a joint decision by the executive branch and Congress to relieve the nation's railroads of the financial burden of providing intercity rail passenger service. According to railroad reports to the Interstate Commerce Commission, that service was causing them to lose hundreds of millions of dollars every year.

Amtrak began operations on May 1, 1971, as a mixed ownership (private and public) corporation whose basic system was prescribed by the Secretary of Transportation and whose operations were supported by federal funds.

The federal subsidy was expected to be an interim measure, because the stated goal of the legislation was to establish intercity rail passenger service on a for profit basis. In short, Amtrak was an experiment to see if a company with no concern other than transporting intercity passengers by rail could operate at a profit.

Establishment of an integrated nationwide intercity rail passenger service with reliable, comfortable, and convenient service, starting from the declining service that was present at the time of Amtrak's conception, was a formidable task. By fiscal year 1978, the experiment had produced some positive results, including an increase in ridership and in passenger miles. However, its economic performance had been disappointing.

Table XIV and Figure 3 in this report depict the overall Amtrak performance through fiscal year 1978. As they show, despite some fluctuations, Amtrak ridership, revenues, and passenger miles have increased steadily. Unfortunately, costs have risen at a higher rate than revenues. Overall ridership during the fiscal year 1972–78 period in creased by 50 percent and revenues increased by 112 percent, but costs increased by 192 percent. As a result, the system-wide average deficit per passenger more than doubled during the period, and revenues were covering only 36 percent of costs.

As a result of the rapidly increasing size of this federally funded deficit, the Department of Transportation was directed (by the Congressional Conference Committee Report on the 1978 Supplemental Appropriations Act) to undertake, in cooperation with Amtrak, a comprehensive reexamination of Amtrak's route structure. The Department's preliminary findings and recommendations were submitted to Congress on May 8, 1978.

In the course of conducting the reexamination, the Federal Railroad Administration developed several alternative Amtrak systems and then recommended the one which it concluded would have the best potential for bringing Amtrak's unsatisfactory cost versus revenue trend under control, while preserving the most used intercity rail passenger services. Although the recommended system reduced the 27,000 mile route system to 18,900 miles, it retained 90 percent of the existing system's passenger miles and provided at least daily service to 160 major metropolitan areas, including the country's 36 largest cities. Overall, the recommended system was expected to save $1.4 billion in operating subsidies through fiscal year 1984. Further, and unlike the existing system, it was estimated that the recommended system would make a positive contribution to energy conservation efforts.

In order to afford affected states, communities, and individuals an opportunity to assist the Department in developing its final recommendations, the Rail Services Planning Office of the Interstate Commerce Commission conducted public hearings during June, July, and August of 1978. The public comments received were to be taken into consideration in preparing the Department's final recommendations, which were to be submitted to Congress in January 1979.

By the end of fiscal year 1978, although Amtrak had not become self-sustaining (as originally hoped), it was clearly playing an important role in the national transportation picture. Furthermore, the preservation and utilization of intercity rail passenger service, an energy efficient mode of transportation, was expected to increase in importance as energy constraints became more severe. Therefore, the Department considered it essential to develop the ability to control rail passenger costs, so that rail passenger service could be preserved as a viable transportation alternative.

Departmental Reorganization

September 23, 1977. The Office of Public Affairs was retitled the Office of Public and Consumer Affairs. It was assigned responsibility for the consumer functions which had formerly been assigned to the Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs.

September 23, 1977. The Research and Special Programs Directorate (later renamed the Research and Special Programs Administration) was established. It was assigned a variety of intermodal functions which had formerly been assigned to the Assistant Secretary for Environment, Safety, and Consumer Affairs, the Assistant Secretary for Systems Development and Technology, the Assistant Secretary for Administration, and the General Counsel. It was also assigned responsibility for the functions of the Transportation Systems Center and the Materials Transportation Bureau.

October 31, 1977. The Office of the Assistant Secretary for Congressional and Intergovernmental Affairs was retitled the Office of the Assistant Secretary for Governmental Affairs. It was assigned new advisory responsibilities and responsibility for coordinating the development and review of Departmental policies and procedures with significant state and local impact. It was also assigned responsibility for management of the Department's technology sharing program.

November 3, 1977. The Office of the Assistant Secretary for Budget and Programs was established. It was assigned responsibility for those functions which had formerly been assigned to the Office of the Deputy Under Secretary. It was also assigned responsibility for the program evaluation functions which had formerly been assigned to the Assistant Secretary for Systems Development and Technology.

November 3, 1977. The Office of the Deputy Under Secretary was abolished.

December 10, 1977. The Office of the Assistant Secretary for Policy, Plans, and International Affairs was retitled the Office of the Assistant Secretary for Policy and International Affairs. It was assigned responsibility for facilitating intermodal cooperation and for analyzing the effects of various public policies on domestic and international air transportation. It was also assigned responsibility for the environmental and safety functions which had formerly been assigned to the Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs.

December 10, 1977. The Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs and the Office of the Assistant Secretary for Systems Development and Technology were abolished.

January 17, 1978. The Office of the General Counsel was reorganized. As part of this reorganization, the Office of Operations and Legal Counsel was retitled the Office of Environment, Civil Rights, and General Law; and two new offices were created — the Office of Regulation and Enforcement, and the Office of International Law.

TABLE I. U.S. Department of Transportation Program Levels, Budget Authority, Obligations, and Outlays, Fiscal Year 1978.

(dollars in millions)

Organization	*Program Levels*[1]	*Budget Authority*	*Obligations*	*Outlays*
Office of the Secretary	60	59.9	60.6	41.9
United States Coast Guard	1,427	1,423.8	1,456.3	1,284.1
Federal Aviation Administration	2,773	2,775.6[2]	2,746.4	2,777.9
Federal Highway Administration	7,512	7,034.9	7,638.0	6,075.9
National Highway Traffic Safety Administration	251	231.4	253.3	210.4
Federal Railroad Administration	806	774.6	798.6	359.5
National Railroad Passenger Corporation	716	716.0	716.0	716.0
Urban Mass Transportation Administration	2,985	484.0	2,985.3	2,027.5
Saint Lawrence Seaway Development Corporation	—	—	6.7	(2.8)
Research and Special Programs Administration	8	8.3	7.1	1.0
Subtotals	16,539	13,508.5	16,668.4	13,491.3
Deduct Proprietary Receipts from the Public	—	(39.5)	—	(39.5)
TOTALS	16,539	13,469.0	16,668.4	13,451.8

[1] A combination of budget authority and obligations which is the best budgetary indicator of the Department's activities.

[2] Excludes $9 million reappropriation for facilities and equipment.

TABLE II. U.S. Department of Transportation Authorized Full-Time Permanent Positions, Fiscal Year 1978.

Organization	
Office of the Secretary	1,331
United States Coast Guard[1]	45,401
Federal Aviation Administration	58,925
Federal Highway Administration	4,918
National Highway Traffic Safety Administration	909
Federal Railroad Administration	1,671
Urban Mass Transportation Administration	557
Saint Lawrence Seaway Development Corporation	194
Research and Special Programs Administration	807
TOTAL	114,713

[1] Includes 6,981 civilians and 38,420 military.

TABLE III. U.S. Department of Transportation Full-Time Civilian Minority and Female Employment, 1968–78.

Year	*Total*[1]	*Minority*[1]	%	*Total*[2]	*Female*[2]	%
1968	58,556	5,032	8.6	50,773	9,354	18.4
1969	58,726	4,586	7.8	52,400	8,856	16.9
1970	62,278	5,216	8.4	56,805	9,979	17.6
1971	66,918	6,063	9.1	60,047	10,411	17.3
1972	66,219	6,372	9.6	61,368	10,773	17.6
1973	65,227	6,248	9.6	61,851	10,316	16.7
1974	65,098	6,773	10.4	62,723	10,898	17.4
1975	68,241	7,647	11.2	64,588	11,373	17.6
1976	71,679	8,989	12.5	65,758	11,745	17.9[r]
1977[r]	72,809	9,573	13.1	74,289	12,833	17.3
1978	71,972	9,623	13.4	73,471	12,752	17.4

[r] Revised.

[1] Minority employment figures and related totals exclude employees in Hawaii, Guam, and Puerto Rico.

[2] Female employment figures and related totals cover white collar positions only for the years 1972–75, general schedule positions only for years 1968–71 and 1976, and all employees for 1977 and 1978.

NOTES:

1. Minority data are as of June 30 for 1968 and 1969; September 30 for 1977 and 1978; and May 31 for all other years.
2. Female data are as of May 31 for 1970, 1971, and 1976; June 30 for 1968 and 1969; September 30 for 1977 and 1978; and October 31 for 1972–75.
3. Source of the data for 1972–75 was the Civil Service Commission.

TABLE IV. Abstract of U.S. Coast Guard Operations Within the Enforcement of Laws and Treaties Program, Fiscal Year 1978.

Fisheries Law Enforcement	
Vessel Hours[1]	58,834
Aircraft Hours[1]	5,752
Foreign Fishing Vessels Present[2]	3,838
Fishing Vessel Boardings	2,652 (1,239 foreign; 1,413 domestic)
Citations Issued	293 (241 foreign; 52 domestic)
Civil Penalties Initiated	163 (92 foreign; 71 domestic)
Vessels Seized	7 (total penalties $367,000)
General Law Enforcement[3]	
Vessel Hours[1]	90,000
Aircraft Hours[1]	4,658
Vessels Seized	130
Persons Arrested	796
Street Value of Interdicted Contraband	$1,194,500,000

[1] Vessel and aircraft hours reflect actual operations for the period from October 1, 1977 through June 30, 1978, and an estimate of operations for the period from July 1, 1978 through September 30, 1978. The estimate is based on data received from approximately 75 percent of the operating units.

[2] The number of foreign fishing vessels present is the sum of the monthly totals. Any foreign fishing vessel present in more than one calendar month is counted once for each month; therefore, one vessel which is in the patrol zone continuously for 12 months counts as 12 vessels.

[3] Operations related to drug trafficking, customs, illegal aliens, etc. The data given reflects the results of Coast Guard operations both independent of and in conjunction with other law enforcement agencies. Drug interdiction efforts account for most of the operations.

TABLE V. U.S. Coast Guard Financial Statement, Fiscal Year 1978.

Appropriated Funds	*Funds Available*[1]	*Total Obligations*	*Unobligated Balances*[2]
Operating Expenses	$ 923,829,023	$ 921,460,444	$ 2,368,579
Acquisition, Construction, and Improvements	350,907,361	270,245,720	80,661,641
Alteration of Bridges	15,100,000	15,100,000	—
Retired Pay	157,401,000	156,460,871	940,129
Reserve Training	38,560,000	38,267,347	292,653
Research, Development, Test, and Evaluation	25,559,095	24,393,212	1,165,873
State Boating Safety Assistance	5,996,337	5,823,751	172,586
Pollution Fund	21,101,131	9,922,986	11,178,145
TOTAL APPROPRIATED FUNDS	1,538,453,937	1,441,674,331	96,779,606
Reimbursements			
Operating Expenses	20,473,396	20,473,396	—
Acquisition, Construction, and Improvements	6,281,528	3,016,890	3,264,638
Reserve Training	26,754	26,754	—
Research, Development, Test, and Evaluation	847,077	671,278	175,799
TOTAL REIMBURSABLE FUNDS	27,628,755	24,188,318	3,440,437
Trust Funds			
Coast Guard General Gift Fund	39,317	8,862	30,455
Surcharge Collection, Sale of Commissary Stores	399,060	191,148	207,912
Coast Guard Cadet Fund	4,348,238	4,348,238	—
TOTAL TRUST FUNDS	4,786,615	4,548,248	238,367
Intra Governmental Revolving Funds			
Coast Guard Supply Fund	58,298,474	57,810,626	487,848
Coast Guard Yard Fund	39,882,316	29,849,137	10,033,179
TOTAL REVOLVING FUNDS	98,180,790	87,659,763	10,512,027
Special Funds			
Special Statistical Work	374,535	374,535	—

Accrued Gross Expenditures	*Total*	*Direct*	*Reimbursable*
Operating Expenses	$ 926,157,807	$ 908,371,260	$ 17,786,547
Acquisition, Construction, and Improvements	166,192,393	160,982,493	5,209,900
Alteration of Bridges	8,512,218	8,512,218	—
Retired Pay	156,440,423	156,440,423	—
Reserve Training	37,793,748	37,764,921	28,827
Research, Development, Test, and Evaluation	19,805,887	19,179,109	626,778
State Boating Safety Assistance	5,571,833	5,571,833	—
Pollution Fund	9,686,899	9,686,899	—
Coast Guard General Gift Fund	8,605	8,605	—
Surcharge Collections, Sale of Commissary Stores	191,148	—	191,148
Coast Guard Cadet Fund	4,348,238	—	4,348,238
Coast Guard Supply Fund	58,617,628	—	58,617,628
Coast Guard Yard Fund	31,165,274	—	31,165,274
Special Statistical Work	213,213	—	213,213
TOTAL	$1,424,705,314	$1,306,517,761	$118,187,553

TABLE V. U.S. Coast Guard Financial Statement, Fiscal Year 1978 (continued).

[1]Funds available include unobligated balances brought forward from prior year appropriation as follows:

Acquisition, Construction, and Improvements	
Appropriated Funds	$ 94,907,361
Reimbursements	4,026,536
Research, Development, Test, and Evaluation	
Appropriated Funds	5,559,085
Reimbursements	128,749
State Boating Safety Assistance	206,337
Pollution Fund	13,956,638
Coast Guard General Gift Fund	21,783
Surcharge Collections, Sale of Commissary Stores	139,755
Coast Guard Supply Fund	234,519
Coast Guard Yard Fund	24,269,237
TOTAL	$143,450,000

[2]Unobligated balances remain available for obligation in fiscal year 1979 as follows:

Acquisition, Construction, and Improvements	$ 83,781,643
Research, Development, Test, and Evaluation	1,341,672
State Boating Safety Assistance	172,586
Pollution Fund	11,178,145
Coast Guard General Gift Fund	30,455
Surcharge Collections, Sale of Commissary Stores	207,912
Coast Guard Supply Fund	487,848
Coast Guard Yard Fund	10,033,179
TOTAL	$107,233,440

TABLE VI. Summary of Active Airpeople, as of December 31, 1975–77.

Category	*Year* *1975*	*1976*	*1977*
PILOT			
Student	176,978	188,801	203,510
Private	305,863	309,005	327,424
Commercial	189,342	187,801	188,763
Airline Transport	42,592	45,072	50,149
Other[1]	13,412	13,567	14,086
TOTAL	728,187	744,246	783,932
NONPILOT			
Mechanic	205,436	212,303	220,768
Ground Instructor	51,365	53,464	55,717
Ground Tower Operator	23,956	24,584	25,107
Flight Engineer	26,788	27,560	29,871
Other[2]	16,389	16,670	17,121
TOTAL	323,934	334,611	348,584
FLIGHT INSTRUCTOR	44,777	46,236	49,362

[1] Includes helicopter only, glider only, and higher-than-air pilot certificates.

[2] Includes flight navigators, parachute riggers, and dispatchers.

TABLE VII. Hijacking Attempts on U.S. and Foreign Aircraft, Including General Aviation Aircraft, Calendar Years 1968–78.

Aircraft Category	*Year* *1968*	*1969*	*1970*	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*
U.S.	22	40	27	27	31	2	7	12	4	6	6
Foreign	13	47	56	31	31	20	19	13	14	26	12
TOTAL	35	87	83	58	62	22	26	25	18	32	18

TABLE VIII. U.S. General Aviation Accidents, Fatalities, Aircraft Hours Flown, Aircraft Miles Flown, and Accident Rates, Calendar Years 1967–77.

Year	Accidents		Fatalities	Aircraft-Hours Flown	Aircraft-Miles Flown	Accident Rates			
						Per 100,000 Aircraft-Hours Flown		Per Million Aircraft-Miles Flown	
	Total	Fatal		(000)	(000)	Total	Fatal	Total	Fatal
1967	6,115	603	1,229[1]	22,153	3,439,964	27.6	2.72	1.78	0.175
1968	4,968[2]	692[2]	1,399	24,053	3,700,864	20.6	2.86	1.34	0.186
1969	4,767	647	1,413[1]	25,351	3,926,461	18.8	2.55	1.21	0.164
1970	4,712[2]	641[2]	1,310	26,030	3,207,127	18.1	2.46	1.47	0.200
1971	4,648	661	1,355	25,512	3,143,181	18.2	2.59	1.48	0.211
1972	4,256[2]	695[2]	1,421[1]	26,974	3,317,100	15.8	2.57	1.28	0.209
1973	4,255[2]	723[2]	1,412	30,048	3,728,500	14.2	2.40	1.14	0.193
1974	4,425[2]	729[2]	1,438	32,475	4,042,700	13.6	2.24	1.04	0.180
1975	4,237[2]	675[2]	1,345	34,165	4,238,400	12.4	1.97	1.00	0.159
1976	4,193	695[2]	1,320	36,128	4,476,014	11.6	1.92	0.94	0.155
1977	4,476	693	1,395	38,000	4,619,900	11.8	1.82	0.97	0.150

[1] Excludes air carrier fatalities (1967-104, 1969-82, 1972-5) when in collision with general aviation aircraft.

[2] Suicide/sabotage accidents included in all computations except rates (1968-3, 1970-1, 1972-3, 1973-2, 1974-2, 1975-2, 1976-4).

TABLE IX. U.S. Certificated Route Air Carrier Accidents, Fatalities, Passengers Carried, Passenger Miles Flown, and Fatality Rates, in Scheduled Domestic and International Passenger Service, Calendar Years 1967–77.

Year	Accidents		Fatalities				Passengers Carried[1]	Passenger-Miles Flown (000)	Pasg Fatality Rate Per 100 Million Passenger-Miles Flown
	Total	Fatal	Passenger	Crew	Other	Total			
1967	51	8	226	24	5	255	132,088,038	103,381,996	0.219
1968	53	13[2]	305	34	6	345	150,162,701	119,612,578	0.255
1969	48	7	132	17	3	152	159,213,414	132,161,593	0.100
1970	39	2	2	0	1	3	171,697,097	139,157,806	0.001
1971	41	6[2]	174	14	6	194	173,664,737	145,678,876	0.119
1972	43	7	160	13	13	186	188,938,932	159,722,015	0.100
1973	32	6	197	20	0	217	202,207,000	171,436,549	0.115
1974	42	7	420[3]	40	0	460	207,449,006	173,349,894	0.197
1975	28	2	113	9	0	122	205,059,571	174,173,138	0.065
1976	21	2	36	2	0	38	223,313,131	190,915,721	0.019
1977	17	2	64	2	9	75	240,326,516	206,205,410	0.031

[1] Beginning in 1970, carriers were required to report revenue passenger enplanements, whereas prior to 1970, revenue passenger originations were reported.

[2] Includes 2 midair collisions nonfatal to air carrier occupants.

[3] Passenger fatalities occurring in sabotage accidents are included in the passenger fatality column, but are excluded in the computation of passenger fatality rates (1974-79).

TABLE X. Motor Carrier Safety Inspection Activity, Calendar Years 1974–78.

Year	*Inspections Performed*	*Vehicles Taken Out of Service*	*Drivers Taken Out of Service*
1974	25,939	7,867	688
1975	16,372	4,961	425
1976	16,907	5,574	456
1977	18,730	6,985	558
1978	25,695	9,978	597

TABLE XI. Summary of U.S. Train Accidents and Casualties, Calendar Years 1972–77.

Category	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*
Number of train accidents[1]						
Collisions	1,348	1,657	1,551	1,002	1,370	1,363
Derailments	5,509	7,389	8,513	6,328	7,934	8,075
Other	675	652	630	711	944	926
TOTAL TRAIN ACCIDENTS	7,532	9,698	10,694	8,041	10,248	10,362
Number of casualties in accidents of all types[2]						
Trespassers killed	537	578	565	524	457[r]	458
Trespassers injured	586	614	674	703	766[r]	689
Passengers killed	47	6	7	8	5	4
Passengers injured	680	503	574	1,307	998[r]	503
Employees on duty killed	127	158	140	110	100	114
Employees on duty injured	12,456	13,098	15,620	47,318	57,889	61,028
All other persons killed	1,234	1,174	1,196	918	1,068[r]	954
All other persons injured	4,208	4,039	3,950	4,978	5,678[r]	5,647
TOTAL NUMBER OF PERSONS KILLED	1,945	1,916	1,908	1,560	1,630[r]	1,530
TOTAL NUMBER OF PERSONS INJURED	17,930	18,245	20,818	54,306	65,331[r]	67,867

[r] Revised.

[1] Monetary reporting threshold prior to 1975 was $750, in 1975 it was increased to $1,750, in 1977 it was increased to $2,300.

[2] Includes lost time cases only, prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—includes cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

TABLE XII. Summary of U.S. Rail-Highway Grade Crossing Accidents and Casualties, Calendar Years 1972–77.

Accidents[1] and Casualties[2]	*1972*	*1973*	*1974*	*1975*	*1976*	*1977*
Accidents at highway grade crossings involving motor vehicles						
Total Accidents	3,222	3,190	3,089	10,925	11,700	11,849
Number of Persons Killed	1,190	1,078	1,128	788	978[r]	846
Number of Persons Injured	3,201	3,215	3,166	3,600	4,343[r]	4,455
Total rail-highway grade crossing accidents and resulting casualties[2]						
Total Accidents	3,379	3,379	3,278	11,354	12,114	12,299
Number of Persons Killed	1,260	1,186	1,220	978	1,114[r]	944
Number of Persons Injured	3,285	3,306	3,260	4,168	4,831[r]	4,649
Railroad Casualties						
Passengers						
Number of Persons Killed	0	0	0	1	0	0
Number of Persons Injured	0	35	18	96	58	24
Employees on duty						
Number of Persons Killed	1	5	3	2[r]	0[r]	11
Number of Persons Injured	68	103	102	32[r]	54[r]	193
Totals						
Number of Persons Killed	1	5	3	3[r]	0[r]	11
Number of Persons Injured	68	138	120	128[r]	112[r]	217

[r] Revised.

[1] All impacts between on-track equipment and highway users reported beginning in 1975. Prior to 1975, such impacts were reported only if they resulted in a reportable casualty, or in $750 in damages to railroad on-track equipment, signals, track, track structures, and roadbed.

[2] Includes lost time cases only, prior to 1975. Reporting requirements were changed in 1975 to be comparable to OSHA reporting requirements—includes cases with lost or restricted time; those requiring medical treatment beyond first aid; termination of employment; transfer to another job; loss of consciousness; and occupational illnesses.

TABLE XIII. Alaska Railroad Revenue Freight Traffic, by Commodity, Fiscal Years 1975–78.

Commodity	*Revenue Freight Tons (000's)*				% Change 1977-78
	1975	1976	1977	1978	
Sand and Gravel	N/A	N/A	699.5	727.2	+04.0
Coal	N/A	N/A	550.0	593.3	+07.9
Petroleum, Oil, and Lubricants	557.4	632.6	532.3	373.9	−29.8
Forwarder Traffic (Piggyback)	95.3	114.2	99.7	99.5	−00.2
Forest Products	119.5	124.3	82.0	67.8	−17.3
Machinery and Machines	59.5	30.5	47.1	47.0	−00.2
Cement	25.1	31.9	41.5	33.0	−20.5
Iron and Steel Pipe and Fittings	106.8	173.9	16.4	27.6	+68.3
Miscellaneous Manufactures	43.5	29.4	16.7	12.6	−24.6
Manufactured Iron and Steel	60.2	89.0	19.1	11.7	−38.7
Agricultural Products	13.2	9.4	11.5	8.2	−28.7
Animal Products	3.2	2.6	3.6	1.9	−47.2
Other Commodities	816.3	893.8	185.9	173.7	−06.6
TOTAL TONNAGE	1,900.0	2,131.6	2,305.3	2,177.7	−05.5

N/A—Not Available, included in "Other Commodities."

TABLE XIV. Amtrak Passengers, Passenger Miles, Daily Train Miles, Revenues, Costs, Deficit, and Ratios, Fiscal Years 1972–78.

Category	*Year*							*% Change 1977-78*	*% Change 1972-78*
	1972	*1973*	*1974*	*1975*	*1976*	*1977*	*1978*[1]		
Passengers (millions)	13.7	14.7	16.7	15.8	16.9	19.2	20.5	+6.8	+49.6
Passenger Miles (billions)	2.9	3.3	4.4	3.7	3.8	4.1	4.0	−0.2	+37.8
Daily Train Miles (thousands)	71.5	72.9	77.0	80.8	81.5	86.5	86.4	−0.1	+20.9
Revenues ($ millions)	152.7	177.3	242.2	246.5	268.0	311.3	323.1	+3.8	+111.6
Corporate Costs ($ millions)	66.9	46.6	24.9	35.6	43.3	56.8	62.3	+9.7	−6.9
Operating Costs ($ millions)	239.3	272.5	413.2	524.2	630.9	776.0	838.8	+8.1	+250.5
Total Costs ($ millions)	306.2	319.2	438.1	559.8	674.3	832.9	901.1	+8.2	+194.3
Deficit ($ millions)	153.5	141.9	195.9	313.3	379.3	521.6	578.0	+10.8	+276.5
Operating Ratio (Revenue/Costs)	0.499	0.556	0.553	0.440	0.398	0.374	0.358	−4.3	−28.2
Deficit Per Passenger Mile (¢)	5.3	4.2	4.4	8.3	10.9	12.7	14.4	+13.4	+171.7

[1] Estimates.

TABLE XV. Summary of U.S. Motor Vehicle Activities and Fatalities, Calendar Years 1968–78.

Year	*Licensed Drivers (millions)*	*Registered Motor Vehicles (millions)*	*Vehicle Miles Traveled (billions)*	*Traffic Fatalities*[1]	*Fatality Rate*[2]
1968	105.4	103.0	1,020	52,725	5.17
1969	108.3	107.4	1,066	53,543	5.02
1970	111.5	111.2	1,114	52,627	4.72
1971	114.4	116.3	1,184	52,542	4.44
1972	118.4	122.6	1,265	54,589	4.32
1973	121.5	130.0	1,317	54,052	4.11
1974	125.4	134.9	1,283	45,196	3.52
1975	129.8	137.9	1,331	44,525	3.35
1976	134.0	143.4	1,412	45,523	3.22
1977	138.1	148.8	1,477	47,876	3.24
1978	141.8	154.2	1,535	50,226	3.27
% Change 1977–78	+2.68	+3.63	+3.93	+4.91	+0.93
% Change 1968–78	+34.54	+49.71	+50.49	−4.74	−36.75

[p] Preliminary estimate.

[1] Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

[2] Fatalities per 100 million vehicle miles.

TABLE XVI. Summary of U.S. Monthly Traffic Fatalities, Motor Vehicle Mileage, and Fatality Rates, Calendar Years 1973–78.

Category and Year	Month											
	January	February	March	April	May	June	July	August	September	October	November	December
Fatalities[1]												
1973	3,770	3,497	4,286	4,407	4,722	5,071	5,096	5,124	4,829	5,095	4,324	3,831
1974	2,904	2,615	3,218	3,362	3,696	4,176	4,248	4,548	4,139	4,286	4,129	3,875
1975	3,053	2,832	3,309	3,290	4,005	4,037	4,324	4,337	3,896	3,916	3,800	3,726
1976	3,038	2,969	3,197	3,569	4,113	3,979	4,613	4,348	3,994	4,250	3,534	3,919
1977	2,736	2,877	3,497	3,730	4,060	4,320	4,960	4,586	4,250	4,560	4,148	4,152
1978[p]	2,731	2,655	3,515	3,943	4,369	4,633	5,001	4,991	4,756	4,783	4,383	4,466
% Change 1977–78	−0.18	−7.72	+0.51	+5.71	+7.61	+7.29	+0.83	+8.83	+11.91	+4.89	+5.67	+7.56
% Change 1973–78	−27.56	−24.08	−17.99	−10.53	−7.48	−8.64	−1.86	−2.60	−1.51	+6.12	+1.36	+16.58
Mileage[2]												
1973	97.3	93.2	108.2	108.8	115.6	116.6	122.5	125.2	111.0	113.8	105.1	99.5
1974	94.6	86.0	100.2	104.1	111.6	113.3	120.3	123.5	108.6	112.0	104.6	104.6
1975	97.2	91.8	107.4	107.6	117.3	120.1	124.3	126.2	111.0	114.9	105.9	107.2
1976	102.7	98.7	114.5	117.2	123.5	124.4	131.1	132.2	119.7	121.4	113.2	113.2
1977	103.4	103.3	121.0	122.6	130.0	130.5	137.4	137.6	125.3	128.5	119.6	117.3
1978[p]	104.8	103.5	125.9	126.6	135.5	137.1	142.9	144.5	131.5	135.1	124.4	123.1
% Change 1977–78	+1.35	+0.19	+4.05	+3.26	+4.23	+5.05	+4.00	+5.01	+4.95	+5.14	+4.01	+4.94
% Change 1973–78	+7.71	+11.05	+16.36	+16.42	+17.21	+17.58	+16.65	+15.42	+18.47	+18.71	+18.36	+23.72
Fatality Rate[3]												
1973	3.88	3.75	3.96	4.05	4.09	4.35	4.16	4.09	4.35	4.48	4.12	3.85
1974	3.07	3.04	3.21	3.23	3.31	3.68	3.53	3.68	3.81	3.83	3.95	3.71
1975	3.14	3.08	3.08	3.06	3.41	3.36	3.48	3.44	3.51	3.41	3.59	3.48
1976	2.96	3.01	2.79	3.04	3.33	3.20	3.52	3.29	3.34	3.50	3.12	3.46
1977	2.65	2.78	2.89	3.04	3.12	3.31	3.61	3.33	3.39	3.55	3.47	3.54
1978[p]	2.61	2.56	2.79	3.11	3.22	3.38	3.50	3.45	3.62	3.54	3.52	3.63
% Change1977–78	−1.51	−7.91	−3.46	+2.30	+3.21	+2.11	−3.05	+3.60	+6.78	−0.28	+1.44	+2.54
% Change1973–78	−32.73	−31.73	−29.55	−23.21	−21.27	−22.30	−15.87	−15.65	−16.78	−20.98	−14.56	−5.71

[p] Preliminary estimates.

[1] Deaths attributable to motor vehicle accidents and occurring within 30 days after the accidents.

[2] Billions of vehicle miles.

[3] Fatalities per 100 million vehicle miles.

TABLE XVII. Summary of Reported Gas Pipeline Failures and Casualties, Calendar Years 1970–77.

	Distribution					*Transmission and Gathering*				
		Fatalities		*Injuries*			*Fatalities*		*Injuries*	
Year	*No. of Failures*	*Employees*	*Non-Employees*	*Employees*	*Non-Employees*	*No. of Failures*	*Employees*	*Non-Employees*	*Employees*	*Non-Employees*
1970	676	1	20	32	170	343	1	0	8	8
1971	875	6	36	36	329	410	2	1	14	10
1972	884	2	26	32	262	409	3	3	23	13
1973	893	1	32	48	285	471	1	1	3	16
1974*	1,017	1	19	31	283	460	1	3	7	13
1975*	979	0	8	29	191	394	5	1	8	9
1976*	1,036	3	50	66	253	543	2	8	28	19
1977*	1,530	2	27	39	381	466	4	3	19	11

*Includes data from telephonic reports which were not included in data for calendar years 1970-73.

TABLE XVIII. Summary of Reported Gas Pipeline Failures, by Type and Cause, Calendar Year 1977.

		Injuries		*Fatalities*	
Type of Line and Cause of Failure	*Total Number of Failures*	*Employees*	*Non-Employees*	*Employees*	*Non-Employees*
Transmission and Gathering Lines					
Subtotals by Cause					
Corrosion	115	6	1	4	2
Damage of Outside Forces	233	6	9	0	1
Construction Defect or Material Failure	102	4	0	0	0
Other Causes	17	3	1	0	0
Total	466	19	11	4	3
Distribution Lines					
Subtotals by Cause					
Corrosion	215	1	70	0	1
Damage by Outside Forces	935	12	135	0	11
Construction Defect or Material Failure	169	4	45	1	8
Other Causes	211	22	131	1	7
Total	1,530	39	381	2	27
COMBINED TOTAL	1,996	58	392	6	30

TABLE XIX. Summary of Reported Liquid Pipeline Accidents and Casualties, Calendar Years 1968–77.

Year	*Accidents*	*Deaths*	*Injuries*	*Loss of Commodity (Barrels)*
1968	499	11	32	392,588
1969	403	5	4	343,691
1970	347	4	21	521,849
1971	308	1	8	245,057
1972	309	8	19	360,654
1973	273	7	8	379,365
1974	256	10	11	293,643
1975	255	7	15	319,423
1976	209	5	5	255,037
1977	238	3	19	228,429

FIGURE 1. U.S. Department of Transportation Program Levels, Fiscal Year 1978.

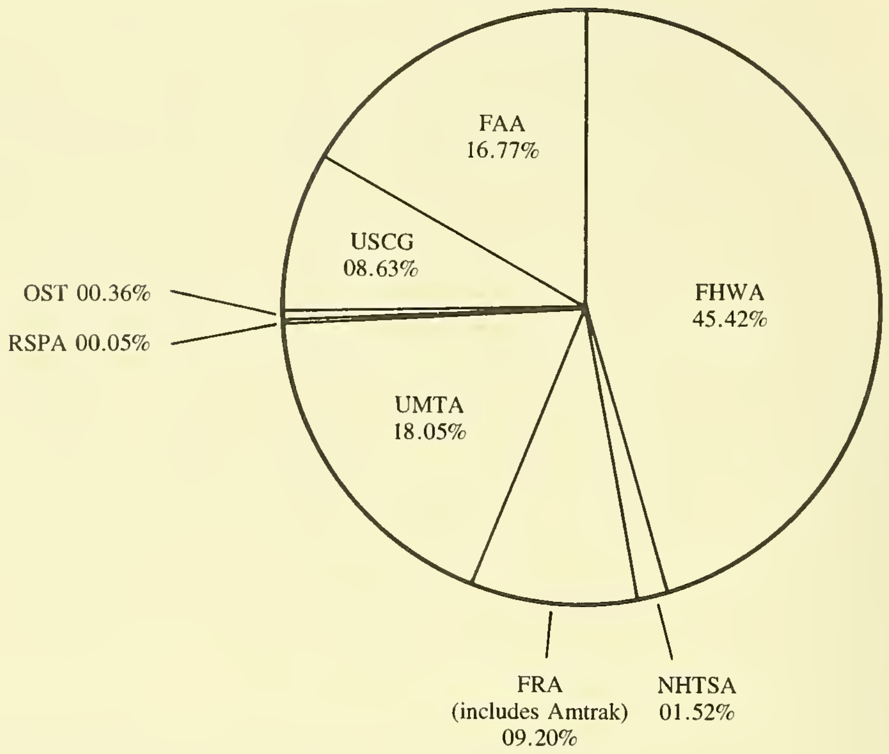


FIGURE 2. U.S. Department of Transportation Authorized Full-Time Permanent Positions, Fiscal Year 1978.

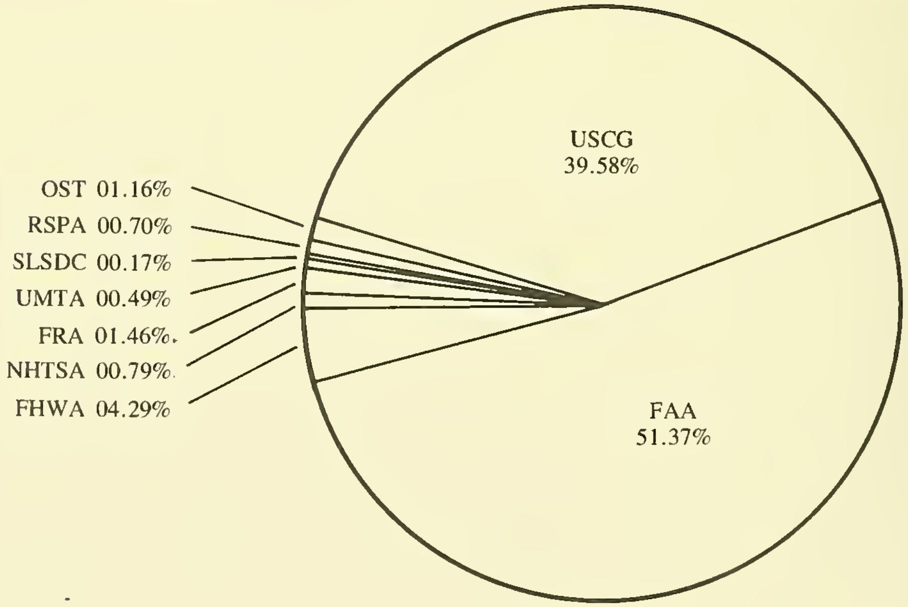


FIGURE 3. Relative Changes in Amtrak Costs, Revenues, Operations, and Performance, Fiscal Years 1972–78.

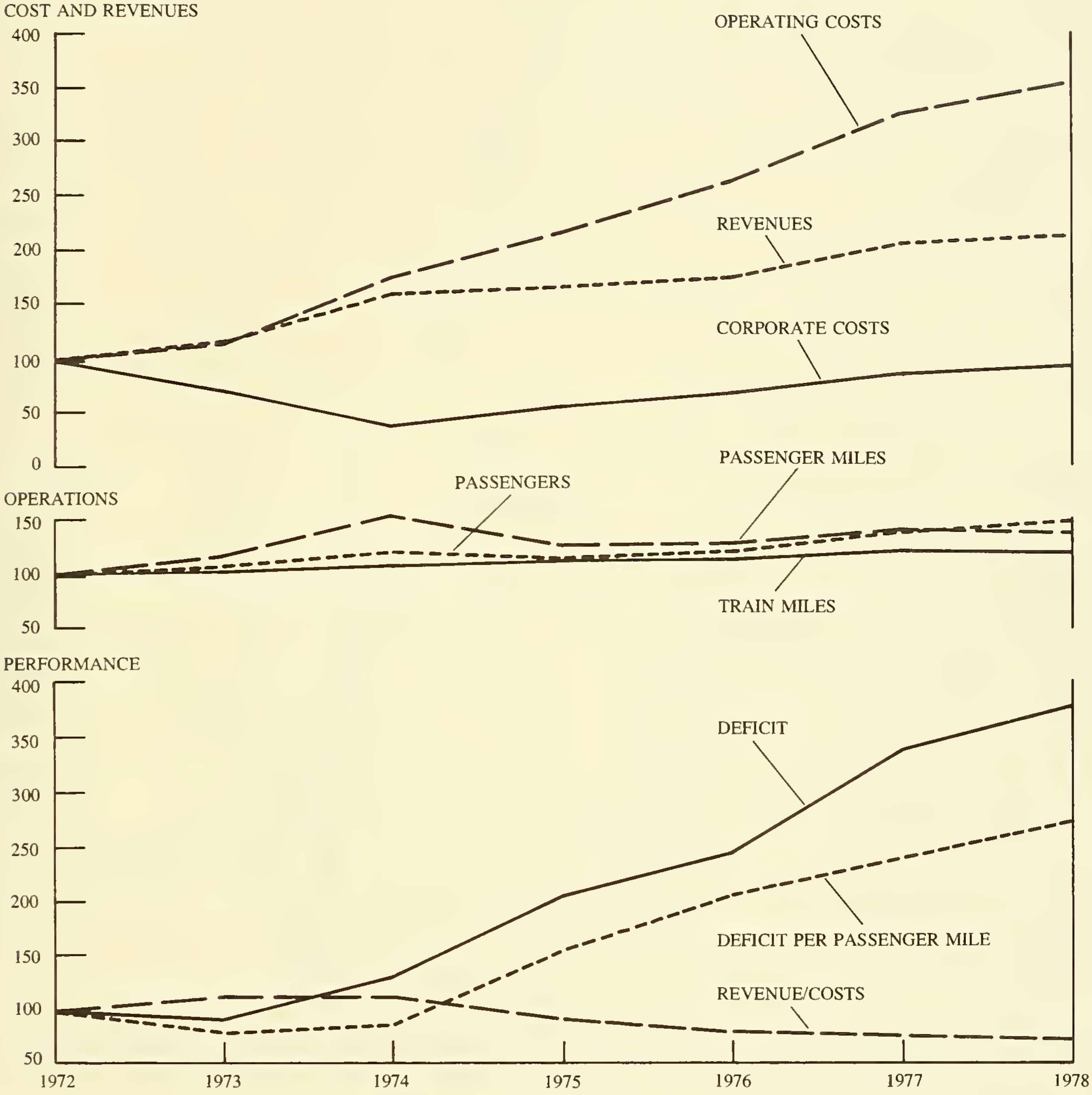


FIGURE 4. Relative Changes in U.S. Traffic Fatalities, Mileage, and Fatality Rates, Calendar Years 1976–78.

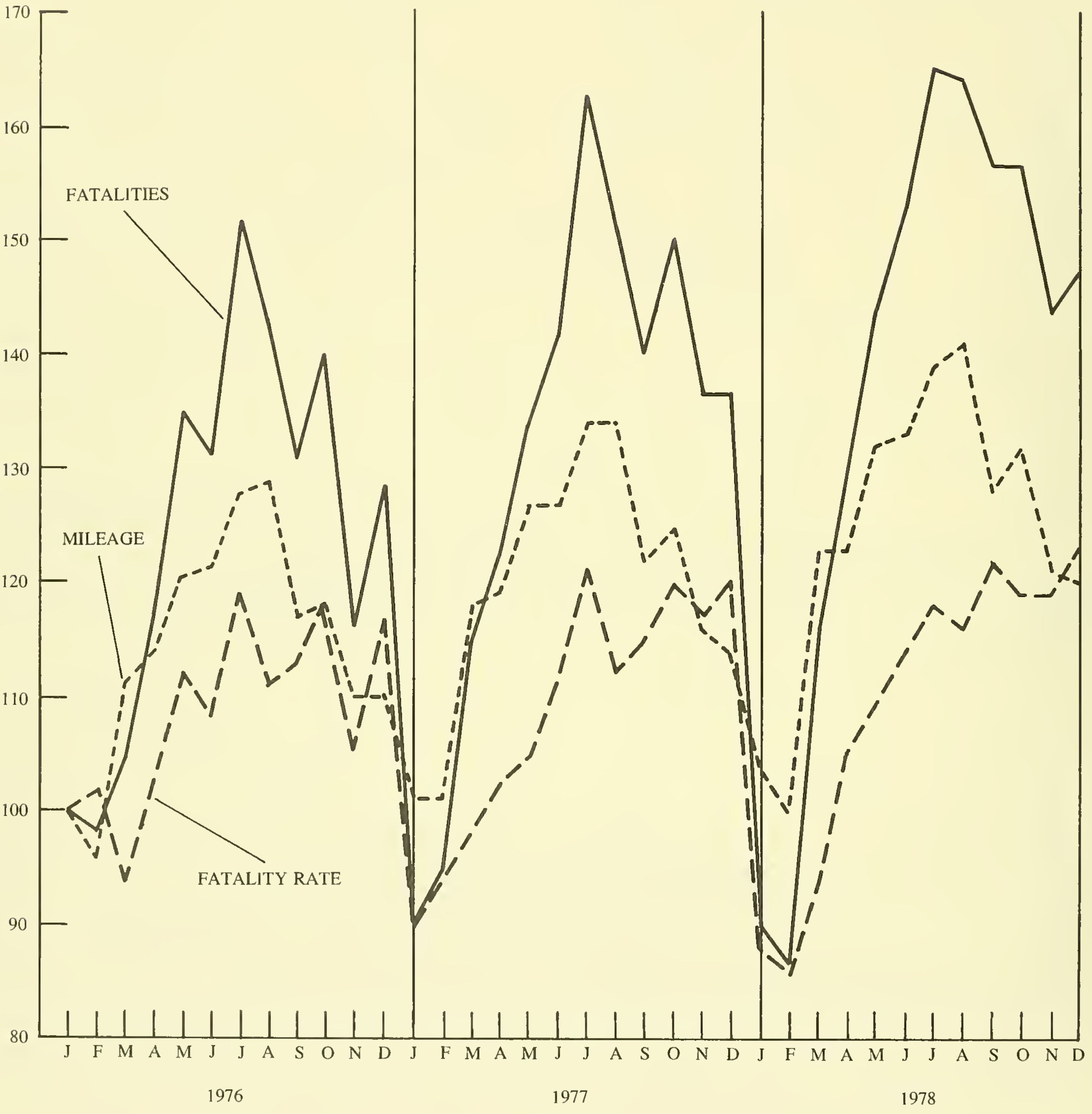
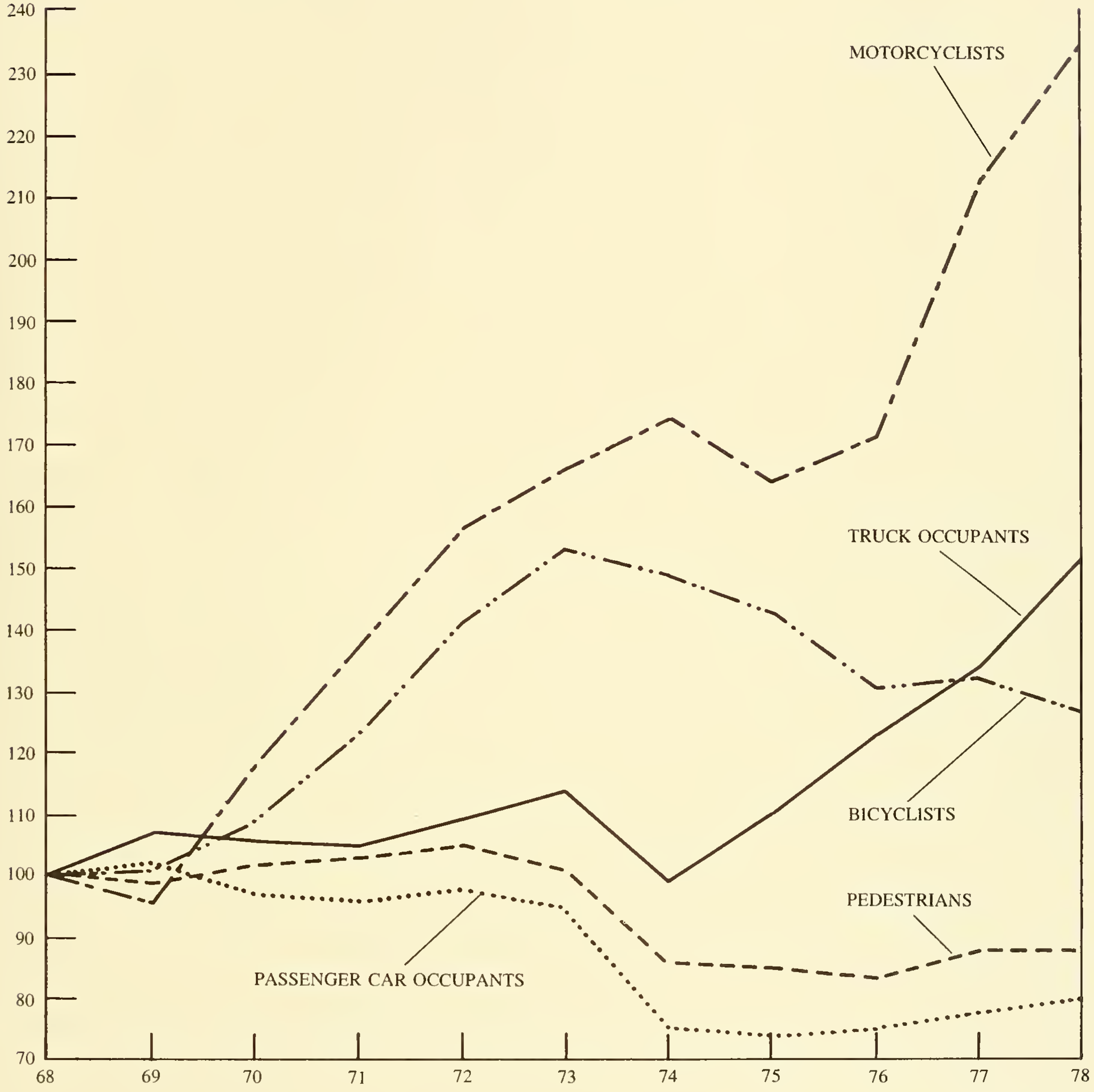


FIGURE 5. Relative Changes in Highway Fatalities, by Principal Categories, Calendar Years 1968–78.



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